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In Memoriam

HENRY BRASSINGTON STONE (O.C.)

LIEUT., R.E.,

KILLED IN ACTION 18 FEBRUARY 1915













WORCESTER PEARMAIN APPLE.

THE  
FLORAL WORLD  
AND  
GARDEN GUIDE.

*Illustrated with Coloured Plates and Wood Engravings.*

EDITED  
BY  
SHIRLEY HIBBERD, ESQ., F.R.H.S.

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1876.

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# THE FLORAL WORLD

AND

## GARDEN GUIDE.

### THE WORCESTER PEARMAIN APPLE.

(With a Coloured Illustration.)



HE beautiful apple here figured has been freely exhibited in the past few years, and the appointed judges of fruit at all our great exhibitions have had many opportunities to judge of its merits. Everywhere it has been pronounced a grand acquisition for its fine qualities as a table fruit, its exquisite beauty and consequent value for decorative purposes, and the immense productiveness of the tree. The stock of this fine apple is in the hands of Mr. Richard Smith of Worcester, who is sending it out at a cheap rate, so that those who want it may as well buy at once, as wait until it ranks in price with commoner kinds, which cannot happen for several years. The fruit is of medium size, distinctly conical, very even and neat in outline, with a highly polished skin of a fiery crimson colour. The flesh is white, tender, of an agreeable balsamic flavour, and sufficiently sweet. It is in season from September to Christmas.

It may be of some service to our readers to add to the foregoing notice of the Worcester Pearmain apple a list of

#### THE HANDSOMEST APPLES AND PEARS.

The letters L, M, and S, mean large, medium, and small.

APPLES.—*Red Astrachan*, M, yellow and red, August. *White Calville*, L, yellow, tender, January. *Court of Wick*, S, yellow and russet, rich, October. *Cox's Orange Pippin*, M, yellow streaked red, November. *Cox's Pomona*, L, yellow streaked crimson, tender, October. *Devonshire Quarrenden*, M, crimson, crisp, August. *Fairy*, S, red and yellow, sweet, October. *Golden Harvey*, S, yellow and russet, December. *Golden Pippin*, S, yellow, rich, December. *Grange's Pearmain*, L, yellow, tender, December. *Nonpareil*, M, yellow and russet, rich, February. *Northern Spy*, L, yellow streaked red, tender, January. *Reinette du Canada*, large, brown-yellow, firm, December. *Mère de Ménagé*, large, red, firm, November. *Golden Winter Pearmain*, M, yellow and red, tender and delicious, November to January.

January.

**SIBERIAN CRAB.**—*Pyrus malus prunifolia*, s, yellow and red, September. *Transparent Crab*, *P. m. astracanica*, m, yellow-white, brisk, October.

**PEARS.**—*Baronne de Mello*, l, brown-russet, rich, October. *Beurre d'Arenberg*, m, cinnamon, rich, December. *Beurre d'Amanlis*, l, brown-red, melting, September. *Beurre Easter*, l, green, buttery, February. *Bon Chretien (Williams's)*, l, yellow, August. *Citron des Carmes*, s, yellow and red, melting, July. *Colmar van Mons*, m, green, buttery, November. *Comte de Lamy*, m, yellow and red, buttery, October. *Doyenne d'Ete*, s, yellow and red, sugary, July. *Forelle*, m, lemon-yellow, crimson-cheek, melting, November. *Josephine de Malines*, m, yellow, vinous, February. *Louise Bonne of Jersey*, m, yellow and crimson, sugary, October. *Marie Louise*, l, green-yellow, juicy, October. *Knight's Monarch*, m, yellow, piquant, December. *Zephyrin Gregoire*, m, green-yellow, rich, December.

## GOLDEN RULES FOR CROPPING THE KITCHEN GARDEN.

BY A KENTISH GARDENER.



**O**WNERS of small gardens generally grow too many sorts of each of the classes of vegetables cultivated, and in consequence much of the limited space at their disposal is devoted to things that are decidedly second-rate. It is, of course, necessary to have several varieties of some of the vegetables, for the purpose of maintaining a succession throughout the season in which they may be had in perfection, but no good excuse can be made for the large number of sorts usually grown. The seed catalogues contain such long lists of the principal kinds—the peas and potatoes, for example—that it is not to be wondered at if the amateur purchases twice as many sorts as he should have, and in his selection includes a proportion of decidedly inferior sorts; for the seedsmen appear to lack the courage needful for describing any of the things included in their lists as “second-rate,” “inferior to others,” and so on. Knowing the difficulties under which amateurs labour in making up a list of vegetables for sowing during the season, I have prepared a list of vegetables that should be grown in small gardens, and in this list I have been careful to include none but those of first-class quality, and which yield very heavy crops in proportion to the space occupied, and are the best adapted for maintaining a long succession. A few hints will also be given on the best times for sowing to obtain good crops, and in the case of those which may be had over a long period, the times mentioned for sowing to maintain a good supply without any break. The list will doubtless appear very meagre, as compared with an ordinary trade catalogue; but those who depend upon it may rest assured that quite sufficient are enumerated for the purpose of those who have a kitchen-garden ranging from a quarter of an acre to two acres in extent.

**BROAD BEANS.**—These are not, as a rule, required in large quantities, and in few instances only will it be necessary to sow for very early or late supplies. One sort will suffice, and this should be *Beck's Green Gem*, if the space is very limited, as it does not exceed twelve inches in height, and produces an immense crop in proportion to the space occupied. The produce is of excellent quality and colour. In medium-sized gardens a taller sort may be sown, and the best is the *Green Windsor*, well known for productiveness and excellency of quality. Two sowings will suffice, the first to be made about the middle or end of February, and the second a month afterwards; the drills to be three feet apart, and the seeds to be three inches from each other in the drills; for unless the plants have plenty of room, there will not be much chance of a heavy crop.

**BETT.**—There are about a dozen beets in the catalogue, but one is quite sufficient, and that one should be *Nutting's Dwarf Red*, a dwarf-growing sort, producing medium-sized roots of superb quality. Sow about the end of April in drills one inch in depth, and twenty inches apart; and when the plants are nicely up, thin to ten inches apart.

**BRUSSELS SPROUTS.**—This is the most delicate vegetable we have for winter use, and, when well grown, very profitable. The best stock is that known as *Scrymger's Giant*. Sow a pinch of seed in February, if there is a pit at work with cucumbers, or for propagating purposes, and prick out the plants in a frame when large enough. These will be useful for the first supply. Make a main sowing on a sheltered border about the second week in March, and immediately they are large enough, plant in the quarters where they are to be grown. They cannot be put out too early. Two feet each way is a very good distance to plant them if the soil is in good heart, but in rather poor ground twenty inches will be quite far enough for them to be apart. Some of the smaller plants may be put out rather later in quarters from which early crops of potatoes have been taken, and for these eighteen by twenty inches will suffice.

**BROCCOLI** are not suitable for very small gardens, because of the liability of their being killed by severe frosts during the winter. The best time for sowing is, speaking generally, the first week in May, and the finest of the established varieties for succession are *Walcheren*, *Grainger's Autumn White*, *Sutton's Superb*, *Leamington*, *Carter's Champion*, and *Cattell's Eclipse*. They are here arranged in the order in which they will be ready for the table, the first in October, and the last-mentioned in April and May. They should be planted out when thoroughly strong, the rows to be thirty inches and the plants two feet apart.

**CAULIFLOWER.**—To insure a good supply of these during the summer, sow the *Walcheren* in heat in February, and plant out when large enough, and sow out-of-doors in May and June, and for keeping in frames over the winter about the 20th of August; but in most gardens it will suffice to sow in May for autumn, and in August for early summer use; for if the weather is dry, and the soil not over rich, the other crops are seldom satisfactory, and there is an abundance of other good vegetables when they are ready.

**CABBAGE.**—The most suitable for small gardens are those which heart-in quickly, and do not grow over large. Cabbages are most useful early in the summer, before the peas come in, and again in the autumn, during October and November, when there is usually a scarcity of green vegetables. For sowing in the spring, for autumn use, the best is *Barr's Green Gem*; and for sowing in the early part of August, to stand over the winter for early summer use, *Early York*. If large sorts are preferred, the *Enfield Market* is one of the best, and may be sown in spring and summer. The small sorts should be planted fifteen inches apart one way, and eighteen inches the other; and the larger kinds should have six inches more space. Small cabbages sown about the second week in March, and again the second week in April, and planted out as they acquire sufficient size, and the ground can be spared for them, will far surpass in productiveness the coleworts which are often so strongly recommended. If stumps are allowed to stand, they will bear a good crop of sprouts in the spring.

**CARROTS.**—The *Early Horn*, *James' Intermediate*, and *Altringham*, are all good; the former to be sown on a sheltered border, at the end of February, for early use; the second for sowing about the middle of March, the end of April, and the end of June, for supplying the table with tender carrots during the summer and autumn, and the latter for sowing to yield a heavy crop, for soups and similar purposes. In small gardens, two sowings of *James' Intermediate* will suffice; and the first of these should be made in March, and the second towards the end of April. The *Early Horn* should be sown in rows, six inches apart. *James' Intermediate*, eight inches, and the *Altringham*, ten or twelve inches; and the two last-mentioned must be thinned to four and six inches respectively in the rows.

**CELERY.**—Only one sort is required, and that should be *Major Clarke's Red*, for there is not another celery to surpass it in the size and solidity of its heart, and its crisp and nutty flavour. It is of medium height, and, when properly blanched, is just tinted with pink towards the top of the stalks. For gardens of a small and medium size, a sowing made about the middle of March will suffice. Sow in pans, and place in the cucumber frame. When the plants are an inch high, prick off into boxes, two inches apart, and as soon as they are large enough to well fill these, plant out on a bed of rich soil made up in a cold frame, and in June plant in trenches. Let these be a foot wide, and nine inches deep, and dig in a liberal quantity of manure at the bottom. Nine inches apart is a suitable distance for the plants in the rows. When about three parts grown, commence to earth up. The grand point in celery culture is to maintain a vigorous growth from the time of the young plants making their appearance in the seed-pan until they are ready for earthing up.

**CUCUMBERS.**—The two best cucumbers for growing when not required for exhibition, are *Masters' Prolific*, which attains a length of twelve or fifteen inches; and *Rollisson's Telegraph*, which is generally some six inches longer. Both varieties are very produc-



tive, and of excellent quality. Good crops may be had by planting in cold frames after they are cleared of the bedding plants. These will bear from the end of June until quite late in the autumn; but, if early supplies are required, a hotbed should be made up early in March. For those in the frames it will suffice to form a ridge of soil down the middle, and to put two plants under each light. A compost of two parts loam and one part manure or flaky leaf-mould is most suitable for cucumbers.

ENDIVE is useful for autumn and winter salads, and the best sorts to grow are the *Green Curled* and *Round-leaved Batavian*. Sow the former early in July, and again in August, and the latter the first week in August. It is an excellent plan to make the July sowing of the *Green Curled* in the quarter where they are to remain, for, if sown thinly, and the plants thinned to the proper distance apart, there will be no great waste of seed, and all risk of their running permanently to seed will be avoided. Moreover, as no check will be received, much finer hearts will be the result.

KALES.—The *Dwarf Scotch* and the *Cottager's Kales* are two of the finest winter vegetables that can be grown, for they are thoroughly hardy, and in quality most excellent. Sow early in March, and put the plants out about two feet apart in rows with a space of three feet between, as soon as they are large enough to be moved from the seed-bed. The result will be a grand crop of sprouts early in the spring.

KIDNEY BEANS constitute an exceedingly valuable class of summer vegetables. To insure a continuous supply of these, sow in the middle of May, *Sir Joseph Paxton*; the first week in June *Mohawk*, and third week *Cutbush's Giant Dwarf*. The third week in May sow *Scarlet Runners*, and a fortnight afterwards sow the *Champion Scarlet*, or the *White Seeded Scarlet Runner*, which, by the way, has white flowers. It is taller than the ordinary scarlet runner, and also rather later. It does not appear to suffer so much from drought, and the pods are very large, and exceedingly fleshy, and are produced freely until the frost stops the growth. The dwarf varieties should be six inches from plant to plant, in rows two feet or thirty inches apart.

MELONS may in hot summers be also grown in frames without the assistance of a hot-bed or artificial heat of any kind, but the best course is to provide a hot-bed and plant some time in April. The two best sorts are *Read's Scarlet Flesh*, and *Gilbert's Green Flesh*.

LETTUCE.—The best cos variety for spring and summer sowing is *Hick's Hardy White*, and for autumn and spring, to stand the winter, the *Brown Bath*. The best cabbage sort is *Drumhead* for spring and summer sowing, and the *Hammersmith Hardy Green* for autumn sowing. A sowing about once a month from the first of March to the first of July, will suffice for maintaining a good summer and autumn supply. About the middle of August sow for standing the winter. Lettuce, of course, may be sown in beds and transplanted, but the best results are obtained by sowing in spring and summer where the crop is to be grown, and then thinning to the proper distance apart. In dry summers really first-class hearts cannot be

had unless this practice is adopted. The rows should be eighteen inches apart, and the plants twelve inches apart.

ONIONS.—The two best onions for spring sowing are the *Reading* and *James' Long Keeping*, the former for autumn and early winter use, and the latter for late winter and spring. The best for autumn sowing is the *Globe Tripoli*; sow the two first mentioned in March, and the other towards the end of August. The drills to be nine inches apart, and the onions to be thinned to be six inches apart; the thinning should be done gradually, so that the surplus onions may be utilized.

PARSNIP.—The best is the *Hollow Crowned*, which should be sown early in March in rows, eighteen inches apart, and, when large enough, thinned to nine inches.

PEAS.—The most desirable of these for the owner of the small garden are *Dickson's First and Best* and *Kentish Invicta*; for sowing in February for earliest supply, *Huntingdonian*; for sowing early in March for second crop, or if a pea not exceeding three feet is required, *Woodford Green Marrow*. For main crops, sow towards the end of March *Veitch's Perfection* and *James' Prolific*. Later grown crops cannot be recommended for small gardens, because of their precarious character. With the exception of *Huntingdonian*, all that are here mentioned are about three feet in height, and they are quite tall enough for gardens of limited extent. Sow thickly, and let the rows be from twelve to twenty feet apart, and between the peas sow or plant crops of dwarf growth.

RADISHES may be sown with advantage at intervals of about twenty days from the first week in March until the end of April; but crops sown later are seldom good. *Wood's Early Frame* is the most suitable for the first sowing, and afterwards the best are the *Olive-shaped Scarlet* and *White-tipped Olive-shaped*.

SAVOY.—The *Dwarf Green* is a very excellent variety, and should be sown in March, and planted out as opportunities offer fifteen inches apart each way.

TOMATO.—The finest of the red sorts is *Hathaway's Excelsior*, and the best of the yellow sorts *Carter's Greengage*. Sow these in heat, pot off separately when of proper size, and plant out against a south wall as soon as danger from frost is past.

TURNIPS.—*Early White Stone* is most useful for sowing in the early part of the season, and *Veitch's Red Globe* for sowing in the summer for main supplies.

VEGETABLE MARROWS.—If extra large fruits are preferred, the *Long White* will be found the best; but if an abundance of medium-sized fruit of the most delicate flavour is desired, then grow *Hibberd's Prolific*. These may be raised in heat in April, and planted out in May; or they may be sown in the last-mentioned month where they are to remain. After the plants make their appearance above ground, they grow rapidly, and soon come into bearing. It is not at all necessary to plant Vegetable Marrows on a heap of manure.

## GAS-LIGHT FLOWERS.



THE various shades of mauve, purple, and yellow do not come out well by gas-light. We have avoided them, and in the undermentioned selection have named those only which have a peculiarly bright and effective appearance when seen under the influence of artificial light.

## PRODUCTS OF THE STOVE.

The best of those requiring a stove temperature are the following:  
*Achimenes coccinea*, *A. Stella*, *A. Scarlet Perfection*.

*Æchmea fulgens*. *Æschynanthus splendidus*.

*Amaryllis*, all the scarlet varieties, of which there are now large numbers.

*Anthurium Scherzerianum*. *Aphelandra aurantiaca*, *A. Roezli*.

*Clerodendron Balfouri*.

*Epiphyllum truncatum*, *E. truncatum aurantiacum*, *E. truncatum violaceum*.

*Eucharis amazonica*.

*Euphorbia jacquiniiflora*.

*Gesnera Blassi*, *G. exoniensis*, *G. refulgens*, *G. zebrina splendens*.

*Goodyera discolor*, a pretty white-flowered orchid with rich bronzy leaves, which may be grown under the same treatment as ordinary stove plants.

*Isora acuminata*, *I. coccinea superba*, *I. crocata rutilans*, *I. javanica*, *I. salicifolia*.

*Justicia coccinea*, *J. speciosa*.

*Plumbago coccinea superba*.

*Thysacanthus rutilans*.

## PRODUCTS OF THE GREENHOUSE.

Amongst the inhabitants of the greenhouse the following are first-rate, namely, *Azalea Admiration*, *A. amoena* (pretty little sort for forcing), *A. Brilliant*, *A. Comet*, *A. Flower of the Day*, *A. Grande Duchesse de Bade*, *A. Juliana*, *A. Optima*, *A. Stella*, *A. virginialis*.

Next in importance to the Azaleas we have the Camellias, and of these select the *Old Double White*, *Beali*, *Chandleri elegans*, *Comtesse Cellini*, *Donkelaari*, *Fimbriata*, *Ochroleuca*, *Paolina Maggi*, and *Variegata*.

Most of the Epacrises are good, but *Alba multiflora*, *Carminata*, *Eclipse*, *Hyacinthiflora fulgens*, and *Hyacinthiflora candidissima*, *Lady Alice Peel*, and *Miniata splendens* are the best.

Of miscellaneous greenhouse plants, select the light-coloured varieties of *Cyclamen persicum*, the red and white varieties of *Primula sinensis*; also *Dracophyllum gracile*, *Imatophyllum miniatum*, *Kalosanthes coccinea superba*, *K. Phoenix*, *Lilium lancifolium album*, the common White Lily, *Rhynchospermum jasminoides*, *Salvia gesneriflora*, *S. splendens*, *Tropæolum Ball of Fire*, *T. Garibaldi*, *T. double scarlet*, *T. Triomphe de Gand*, *T. Wilsoni*.

Berry-bearing plants with scarlet berries are very showy by

gaslight, especially *Ardisia crenulata*, *Rivinia lævis*, *Wetherill's Hybrid Solanums*, *Crategus pyracantha*, *Aucuba Japonica femina Vera* (true, green leaf,) and the scarlet and yellow-berried *Hollies*.

S. H.

### "THE AMATEUR GARDENER'S BEST FRIEND."

**B**Y the foregoing flattering phrase the FLORAL WORLD has been described by a friendly critic. As we have never met with an unfriendly critic, we can at least imagine that the phrase will be generally adopted and become current, to which, of course, we shall have no objection, for we believe it expresses the simple truth. As to the critics, they are either careful to ignore our faults, or keenly sensitive to our virtues, for, amongst the very many critical observations we have been favoured with by the press all have been laudatory, and never a word of condemnation has been uttered. Have we not reason to be thankful? We have, and we are. Perhaps reason to be proud also? Yes, proud also; not, indeed, of our doings, but of the good feeling, the fine generosity, which has brought troops of friends from all quarters to our aid to render the FLORAL WORLD "the Amateur Gardener's Best Friend."

Considering that there are now four weekly and four monthly publications devoted to horticulture, it is satisfactory to be enabled to say that the severe competition appears to be beneficial rather than baneful to our humble undertaking. We go on quietly, and leave others to make a noise, for experience has taught us that fuss is a tax on the energies, and while one is engaged in declaring one's peculiar merits, one loses time and strength that might be devoted to proving one's remarkable excellence. So, in hope of some day accomplishing the proof in our own behalf, we go on quietly, as already remarked, but we want all the help our friends can quietly afford us, by recommending the FLORAL WORLD to all such as it is likely to interest, and by sending us notes of their various horticultural experiences. We have always been very much favoured in these ways, and hope to continue to enjoy sufficient confidence to insure help and sympathy again and again.

The FLORAL WORLD has now entered on the Eighteenth Year of its existence. When it comes of age in three years' time, we shall invite all our readers to a festival, for which we shall now begin to make preparations, for really, you know, it is not often one meets with a periodical so old in years and yet so young in spirit, love, virtue, truth, and usefulness as this is. But perhaps we had better say no more, for fear the shallower ones who hear of our exultations may declare that they begin and end in egotism. There is no egotism here, depend upon it. We have got into our eighteenth year, and that's a fact. We shall assert our modesty by saying no more, except that, with all the heartiness possible, and in that spirit of friendship that grows by long relationship of parties who have never seen one another, we wish all our readers

*A Happy New Year.*

## HOME-GROWN DESSERT ORANGES.

BY W. HARTWEG.



IN the remarks about to be made, it is my intention to open out quite a new source of pleasure and interest to the genuine amateur horticulturist, for I am about to propose that the oranges required for the dessert should be grown at home. The cultivation of dessert oranges cannot be recommended to the notice of the grower for market, because the productions of the Azores can be imported and sold for less money than those of home growth; and before there will be sufficient purchasers prepared to pay the additional price necessary to make the undertaking remunerative, the public taste must be educated to appreciate the difference in the quality of the oranges. The difference is not in the direction many readers of the *FLORAL WORLD* will suppose, for, instead of the English-grown oranges being inferior to those imported from Lisbon, the Azores, and the Spanish coast, they are as superior as they well can be. They do not, perhaps, surpass them to the same extent as the Almeria grapes are surpassed by Alexandrian Muscats, but they are so rich and luscious, when well ripened, that it is difficult to enjoy an imported orange for some time after eating one of home growth. The general opinion among the uninitiated is that English oranges are not fit to eat, and this opinion has prevailed for centuries back, for we find in Evelyn's Diary, written some two hundred years since, an entry to the effect that he had tasted oranges from his own garden equal to those imported, and, from the wording of the entry, it appears that this was regarded as a most exceptional occurrence. It is supposed that oranges become, in this country, pithy, and of an unpleasant flavour, and those with whom you converse are generally able to point to some half-dozen trees in as many gardens, which bear fruit quite uneatable. I could mention at least fifty gardens if it would serve any practical purpose to do so, in which there are orange trees that produce fruit of large size, quite pithy, and of acrid taste, but this fact does not prove that eatable fruit may not be grown. As with pears, so with oranges; there are a large number of varieties, some producing fruit of a medium size and fine quality, and others fruit of greater dimensions, but otherwise worthless.

As the large-fruited varieties have mostly an exceedingly robust habit, and are furnished with bold handsome leafage, they have been largely propagated by trade growers on the Continent, and imported into this country simply for ornamental purposes. There is yet another reason why the oranges sometimes met with in conservatories are not fit to eat, and that is improper culture. To have them in perfection, the trees must represent suitable sorts, and be placed under conditions favourable to the maturation of the crops. They must, for example, be planted or potted in a properly prepared compost, and receive the assistance of artificial heat, more especially during the winter, as it is at that season the fruit arrives at maturity. A high temperature is by no means required, as will be shown in the remarks dealing with the cultural details.

To command success a house must be specially set apart for them. There is no occasion to have an expensive structure ; it may, indeed, be of the plainest description, provided it is moderately roomy, substantial, and efficiently heated. The house should have a span roof, and a very convenient size for an amateur not requiring an extra large supply would be one of the following dimensions :—Width, fifteen feet ; height at the sides, five-and-a-half feet ; and the height at the apex, fourteen feet. The length must be proportionate to the requirements of the cultivator ; but it should not be less than thirty feet, but forty or fifty feet will be better. During the winter, the house will form a most delightful promenade, as the trees will then be in full bloom, and also bearing a crop of ripe fruit, and the temperature required by the trees will be most agreeable on a dull cheerless day. The side-lights should be thirty inches in depth, and rest upon two feet of brickwork, making in all five and a-half, feet. The sides may consist wholly of brickwork, but as the lights give to the house a lighter and more pleasing appearance, they should be employed, unless the slight additional cost is a matter for serious consideration. For heating a house of the dimensions given above, six rows of four-inch pipes will be required, and three rows to be placed next the wall on each side. Ventilators, eighteen inches in depth and three feet in length, must be provided and fixed three feet apart on each side of the ridge, so that the house can be ventilated on either side, and in hot weather on both sides.

Before laying out the interior of the house, it must be determined whether the trees are to be planted in borders, or grown in tubs, boxes, or pots. If they are not to be planted out, pave the floor with tiles, or form a pathway with the tiles, and concrete the remaining surface, to form a hard floor upon which to stand the pots or tubs. If, on the other hand, it is intended to plant in borders, mark out a border on each side four feet six inches in width, the outer edge to be twelve inches from the wall, and this will leave a four-feet space in the centre for a pathway.

A depth of two feet will suffice for the soil, and twelve inches of this should be below, and twelve inches above the level of the floor, and to keep the soil in its place, a neat wall, four and a half inches in thickness will be required all round the bed. To prevent the soil becoming sour through the water applied to the trees remaining in a stagnant state, place a layer of broken bricks six inches in thickness underneath the bed, and in taking out the old soil it will be necessary to excavate it to a depth of eighteen inches. To form the beds, procure good turfy loam, taken from an old pasture or common, to a depth of three or four inches, and after it has been broken up rather roughly, add to it old hot-bed manure and leaf-mould, quite free from pieces of wood and bark ; the proportions to be one part each of leaf-mould and manure to every four parts of loam. They require the same compost when in pots or tubs, and the soil to be rammed firm with the potting-stick, for it is impossible to secure a satisfactory growth, if they are potted loosely.

Standards or bushes, with stems from two to three feet high, are the most suitable for culture under glass, as they naturally form

round heads; and as the lower branches decay, they can be cut away without the tree appearing to be any the worse for the removal. A single line of trees down the middle of the bed will suffice for each side of the house, and from five to seven feet, according to their size, is a very suitable distance for them to be apart. The foregoing applies more especially to the larger growing sorts, but for the *Tangierine*, which, under favourable conditions, seldom exceeds seven feet in height, from four to five feet will be quite sufficient. When the borders are filled with the larger kinds, it is a very excellent plan to have a number of neat bushes of the *Tangierine* in pots, and place them on the border a foot or so from the side of the walk, and opposite the openings between the trees. Stand the pots upon two bricks placed side by side, to prevent the pots being filled with worms to the injury of the trees.

During the summer season, the house must be ventilated freely, by opening the ventilators at the side and in the roof, and excepting in very hot weather during July, and a portion of August, the house must be shut up early enough to retain some of the sun-heat. In the winter the top ventilators only must be opened. From the end of March until the end of September fire-heat will only be required in cold, dull weather; but from September until March a steady fire must be kept going, for a temperature of  $55^{\circ}$  to  $60^{\circ}$  is then necessary for the health of the trees and the perfect ripening of the fruit. Liberal supplies of tepid water will be required throughout the year, but of course, less moisture will be necessary during the winter than in the summer season. When the new growth is being made in the summer, the trees require a good syringing overhead twice or three times a week.

The *Tangierine* has been already mentioned as being of small growth. The fruit is small but of the most delicious flavour, so delicious, that the first samples imported from Lisbon are flat and insipid in comparison. The variety known as the *Maltese Blood Orange* is remarkable for its deep red colour, and rich luscious flavour. It is also very prolific, the trees commencing to bear good crops when only a few feet in height. The *St. Michael's Orange* is the same as the oranges imported from the Azores, at mid-winter, and the finest of those with a yellow flesh. This also is much finer than the imported samples, for as the fruits are allowed to attain maturity on the trees, they are sweeter, more full of juice, and richer.

Home-grown oranges should, when required for placing upon the table, be gathered with one or two sprays, so that they may not be mistaken for imported samples.

#### KÆLREUTERIA PANICULATA.



THE subject here figured is one amongst the many beautiful trees and shrubs that are now and again recommended by writers, and which readers of horticultural papers persist in neglecting, because they do not readily lay hold of the excellence of a thing they have not seen. To place the tree itself before them when its lovely panicles of





KELREUTERIA PANICULATA.





INFLORESCENCE OF *KELLEUTERIA PANICULATA*.

flowers are in perfection, is indeed to us impossible, but we adopt the next best course, which is to present the best possible portrait of the tree, with the life-size figure of a portion of a flowering branch. Our esteemed friend, Mr. A. McKenzie, has lately given prominence to this lovely tree, in his papers on "Park and Garden Shrubberies," which perhaps will render additionally welcome the two beautiful engravings Mr. Damman's pencil has provided us with.

*Kædreuteria paniculata* is a member of the great order *Sapindaceæ*, in which we find the horse chestnut, the pavia, and the acers and negundos. It is a native of China, and its introduction to this country dates from 1763. The leafage is pinnate, the leaflets deeply toothed, of a pleasing dark green colour; the flowers are in light panicles of a deep yellow colour, and are plentifully produced in the month of July. We had several beautiful specimens of this tree for several years in our gardens at Stoke Newington, and as they were quite unhurt by the dreadful winter of 1860-61, there can be no question of its hardiness. From one of our trees the subjoined figures were prepared.

S. H.

## JANUARY FLOWERS.

BY ROBERT OUBRIDGE,

Church Walk Nursery, Stoke Newington, N.



WITH the assistance of a forcing-pit, or plant stove, it is quite surprising what a rich display of flowers may be had during January, provided the cultivator frames his work accordingly. Much can be done in this direction with a warm greenhouse; but there are so many things flowering in the month that require a greater heat to have them in bloom, and there are others that cannot be grown at all without a stove. My intention in alluding to this subject now, is to show that the production of flowers in January, when they are not only worth more, but are more highly appreciated than in any other month of the year, is not such a very difficult task. For some years past, I have done as much with winter flowers as most people, and therefore know something about the best sorts, and the easiest way by which they may be had in bloom at a given moment; I would not of course suggest that any of the best summer flowers should be neglected; but I would strongly advise those who are interested in the matter, to do more than has hitherto been done to make their plant houses brighter, and to provide a more abundant supply of cut flowers for the decoration of the dinner-table, and for hand bouquets. To assist those readers who may be desirous to act upon the hint given, I will particularize a few of the finest things that may be had in flower in January, and offer a few brief remarks on their culture.

In the greenhouse, or conservatory, if a comfortable temperature is maintained, may be had *Coronilla glauca*, an old-fashioned plant, with bright yellow flowers, which is as nearly hardy as possible. It

is not of much use for cutting, but it is very attractive in the form of neat bushes, and to obtain these, you have only to strike cuttings of young shoots, and grow them for eighteen months or so, but taking care not to over-pot them. *Cyclamen persicum* furnishes such a large number of colours, that the conservatory may be made quite gay with them alone. The amateur who may not care for the trouble of raising seedlings has only to purchase two or three dozen of nice bulbs in July, pot them as soon as received, place in a cold frame, and as the autumn comes on remove to a warm greenhouse, or keep the pit rather warmer to encourage them to grow freely, and in January the plants will be well furnished with flowers, ranging in colour from pure white to rich crimson. *Camellias* may be had in variety, one of the most valuable being the old *Double White*, which is such a favourite for bouquets and head dresses. But to have camellias fully in bloom early in January, they must be encouraged to make new growth rather early in the spring previous, by placing them in a genial temperature just as they are starting into growth, and leave them there until it is completed, and the buds set. Then with the assistance of very little warmth they may be had well in bloom in January. The single, semi-double, and double forms of the Chinese Primrose, or *Primula sinensis*, are most valuable, for like the Cyclamens, they make a good display of themselves. The double flowers are very useful for bouquets when properly mounted, but the plants are rather difficult to manage, until their peculiarities are well understood; and for general decorations are surpassed by the single forms. The semi-double primulas are very useful, as the flowers are double enough for bouquets, and the stock may be raised from seed. The best time for sowing primulas to bloom in January, is about the middle of March, and then if they are grown on freely during the summer, they will bloom early; it is of very little use to put primulas raised late into a high temperature, for the warmth favours the production of large leaves, and the flowers do not rise well above them.

Most of the varieties of the *Epacris* are very fine for flowering in January, for their sprays of flowers are very attractive. *Epacris hyacinthiflora* and its white and red varieties are the best. These should be potted in peat and sand, be very carefully watered, and be placed in a light, airy position in the greenhouse when making new growth. *Erica hyemalis* may also be had nicely in bloom now, and neat bushes are very effective in drawing-room decorations. There are a few other things that may be mentioned, as belonging to the greenhouse, but provided a sufficient number of the camellias, cyclamens, and primulas are grown, there will be no lack of colour in the greenhouse, or of flowers for cutting.

The plant stove is of the utmost value in the production of winter flowers, and if we have a look through a stove that during the summer is not devoted to coleus and other weedy things, we shall find a goodly number of plants with flowers. First there is *Aphelandra aurantiaca* Roetzli, which has brilliant orange scarlet flowers, a plant not widely known, although very attractive. To secure nice plants take the tops off the shoots in March, and insert them in sixties,

four cuttings in each, and when well rooted shift into six-inch pots just as they are, and place them in a rather light position in the stove. They require no stopping or training. *Begonias* of the winter flowering section form a very pleasing variety, and are easily grown, as by placing several cuttings in a small pot and shifting on as required, until they reach six or eight inch pots, fine specimens may be had. They require a mixture of turfy loam, leaf-mould, and manure to insure a vigorous growth. *Centradenia rosea* is also a pretty little plant, which may be had in perfection by the simple course of culture advised for the begonias; but it is not a plant to be grown in quantities.

*Bouvardias* are so good that they deserve to be grown extensively. The best is *Bouvardia longiflora*, which has pure white and very sweet-scented flowers, that work well into bouquets. There are several other white sorts, but they are not equal to this for flowering now. *Bouvardia Freelandi* is, perhaps, the next best; it is more compact, and blooms rather more freely, but the flowers are smaller, and destitute of fragrance. *Bouvardia Hogarth* is precisely the same in general character as *Freelandi*, but it has bright scarlet flowers which, although deficient in perfume, are so attractive that they are extremely valuable for bouquets. To have bouvardias in perfection now you have only to strike cuttings in February or March, and shift them on as fast as they fill the pots with roots, and to stop them two or three times in the course of the season, the last stopping to be done about the end of the summer. They do well in a cucumber frame or melon pit, until the end of April, as a brisk temperature and moist atmosphere are most favourable for a vigorous growth. After the beginning of May and until September, a warm pit, with occasional syringing, will afford them suitable quarters, and by shutting up early it will be possible to maintain a free growth during this period without the aid of fire-heat. After the first week in September they must have a place in the stove, or a warm corner in the intermediate house.

*Epiphyllum truncatum* is a grand subject, and as the plants can be grown year after year, and increase in beauty in proportion to their size, it is one of the best for amateurs. Plants with fifteen-inch stems and neat little heads are the best to begin with, and if they are purchased shortly it will be possible to secure a good growth, and lay the foundation of a fine display of flowers next season. *Epiphyllums* make their new growth immediately they have done flowering, and if they require more room for the roots, shift them as soon as the flowers begin to fade into pots one size larger. Place a good layer of crocks in the bottom to secure an efficient drainage, and pot in a compost of equal parts peat, loam, and leaf-mould, with a good sprinkling of sand. Give them a warm corner in the stove, and water liberally until the new growth is completed, and then gradually lessen the water supply. From May to the time of starting them into bloom, a sunny position in the greenhouse, with very little water at the roots, will suit them best, and if the soil becomes quite dry, and remains so for a fortnight or more, they will take no harm. To have them in bloom in January, remove to the

stove early in November, and commence to water freely, and in due course they will be thickly studded with flowers.

*Eucharis amazonica* is a grand thing for the winter, when subjected to a course of management that will insure its flowering at that season. The plants must be grown on freely until the end of August, then rested for two months by being placed in a cool part of the stove, and kept rather dry at the roots. At the end of the resting season, remove to the warmest corner, and supply liberally with tepid water. *Poinsettia pulcherrima*, which we grow by thousands, is the brightest of all the January flowers, and a score or so of well-grown specimens will produce a telling effect in the amateur's stove. As our system of culture was explained in the FLORAL WORLD of February last, it is not necessary to allude to it. *Euphorbia jacquínæflora* is a scarlet-flowered plant that should have a place in the smallest stove, for it is very neat, and the wreaths of flowers are well suited for head-dresses, when natural flowers are worn.

From the forcing-pit, *Hyacinths*, *Lily of the Valley*, and *Tulips* will be coming in freely, and those who have been liberal in their purchases, and have potted early, and started a portion of the stock by placing it in the forcing-pit early in December, will have no difficulty in giving the conservatory a very bright appearance with these flowers alone.

## CHOICE FRUITS FOR THE NEW YEAR.

BY JOHN SCOTT,

Merriott Nurseries, Crewkerne.



THE festivities of the New Year usually make a very large demand upon the garden for fruits and flowers, and oftentimes the demand is more than the garden can meet. It is not, of course, possible to have in gardens of limited dimensions large supplies of grapes and pine-apples; for to have these, expensive structures and professional skill are alike required; but it is quite possible to have a fair supply of grapes, and an abundance of apples and pears throughout the month of January, in gardens of a very moderate size. After a season so favourable to the production of apples and pears as the last, the fruit-room should now be well filled with these fruits; and if it is otherwise, it may be very safely assumed that the orchard and fruit quarters are in need of revision. In very many gardens, too much space is devoted to fruits ripening in summer and autumn, when fruits of all kinds are cheap, to the exclusion of those ready for the table at midwinter, when they are commanding high prices in the market, and are even then difficult to obtain of first-class quality. It would be better to set apart some of the space devoted to their culture to the production of grapes that may be had in excellent condition from the first of December until the end of February with very little more trouble than is entailed by the production of a

crop ripe at the end of the summer and early part of the autumn. The little extra labour in the cultivation of the late grapes consists in the attention required to keep them safe from damp after they attain maturity. But the difference in the value of the two crops is immense; for the early grapes—that is to say, those ripe in August and September—will, according to the usual price they realize in the market, be worth from eighteen pence to two shillings per pound, whilst the late grapes in use from December forwards may be considered to be worth from four to eight shillings per pound; for that sum would have to be paid for first-class produce. The cultivation of late grapes has, during the past few years, acquired immense importance, and it is well deserving of the attention of amateurs who have the necessary convenience for grape-growing.

There are a very large number of dessert apples in season now; so that provided the space can be found for the trees, there is no difficulty in having a goodly supply. There are, indeed, so many of excellent quality, that the chief difficulty consists in making a selection of sorts suitable for a small garden. *Adam's Pearmain* is large, in fact, one of the largest of dessert apples, handsome, and of excellent quality, and the tree is a good bearer. *Blenheim Orange* is one of the best known apples we have, because of its handsome appearance and high quality for culinary purposes, as well as for the dessert. *Boston Russet*, in use from January to April, is a nice medium-sized fruit, and one of the best of its class for the dessert. *Braddick's Nonpareil* is not so remarkable for its appearance as it is for its excellent quality and productiveness; the tree is a great bearer, and well suited for gardens, from which it is of the utmost importance to obtain the largest possible supplies in proportion to their size. *Cockle Pippin* and *Court of Wick* are two medium-sized apples, not particularly handsome; but the quality is so high, and the trees so productive, that they can be well recommended. *Court Pendu Plat* and *Cox's Orange Pippin*, in use from October to February, are, on the other hand, very handsome, and the skin so rich in colour, that they have a very attractive appearance upon the table. They are both of fine quality, and the trees bear good crops. *Fearn's Pippin* is also a very brightly coloured apple, of good quality; and as the tree is a heavy cropper, and the first in season from November to February, it need hardly be said that it is deserving of a hearty recommendation. It is also useful for culinary purposes. *Golden Pippin* and *Sam Young* are two liliputian varieties, at their best from November to February, but perfectly distinct, excepting that they are of the finest quality, and deserving of a place in a very select collection. Very small apples are often treated with contempt by judges at fruit shows, but I hold them to be of the highest value; for apples large enough to satisfy half-a-dozen guests are not required upon the table.

*Ribston Pippin* is not so generally adapted to all soils and situations as the majority of the other varieties enumerated, but its fruit, which is in season from October to May, is so rich in flavour and highly appreciated, that a few trees should be planted. *Sykehouse Russet*, *Scarlet Nonpareil*, *Stamford Pippin*, and *Wyken Pippin*, are

first-class in their way, and if more are required, *Winter Pearmain*, a large and very handsome fruit, with rich and crisp flesh, may be added. It is in season from November to April, is equally adapted for dessert and cooking, and the tree an excellent bearer.

Of Pears, too, there is an abundance in season during January, but pears are variable in character upon different soils, and they are also materially influenced in their season of attaining maturity by the character of the soil and the season, so that it is most difficult, if not practically impossible, to provide every reader with exactly what is required. For a very select collection the under-mentioned can have a hearty recommendation as being usually at their best during the new year's festivities. *Bergamotte Esperen* is first-class in quality, very juicy, sweet, and richly flavoured, and although it is not usually ripe until the end of January, it is so good that it must be mentioned. *Beurre d'Arenberg* is a medium-sized fruit of splendid quality; the flesh remarkable for its buttery, highly-perfumed, and rich flavour, it is at its best in December and January, and therefore one of the most useful for the festive season. *Beurre de Jonghe* is one of the very finest pears of its season—from December to the end of February—is now most popular, but not more so than it deserves to be; the fruit is large, remarkably handsome, and the flesh is rich, juicy, and highly perfumed. *Broompark* is an excellent bearer, and is highly appreciated by those who like pears, having a musky flavour, which in this variety is very distinctly developed. *Glou Morceau*, also ripe in December and January, is of rather large size, and rather of high quality. *Huyshe's Victoria*, and *Knight's Monarch*, which attain maturity at the same time as *Glou Morceau*, are also most excellent in every way, and combine productiveness with good quality. *Winter Nelis* is one of the most delicious pears grown, and may be had in perfection from November until February.

The *Alicante* is a very good grape in the hands of the skilful cultivator, but for the amateur *Lady Downes* is decidedly the best. There is no difficulty in obtaining good crops; it is of excellent quality for so late in the season, and it hangs so well, that with care it may be had in fine condition until April.

If the pears are on the quince, and the apples on Scott's Paradise Stock, the trees will come into bearing in a comparatively short time, and occupy very little room in the garden. Trees on these stocks are decidedly the best for small gardens, for apart from their early fruiting and remarkable productiveness, a comparatively large collection of sorts may be grown in a very small space.

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REPRODUCTION IN THE MUSHROOM TRIBE.—At the annual meeting of the Woolhope Club, Mr. Worthington Smith read a paper on reproduction in the Mushroom tribe. He concludes from his microscopic observations that, so far from infusorial animals being spontaneously generated, they are only differentiated forms of already living cells. He finds that boiling does not destroy the germ of life. He boiled infusoria, and hermetically sealed the tube. After a month, a drop of water from this tube was examined under the microscope, and all appeared dead—certainly all were motionless. In a few minutes appeared signs of life, and an hour after, infusoria were found in the active enjoyment of existence.



## ROSES IN POTS.

BY J. W. MOORMAN,

Gardener to the Misses Christy, Coombe Bank, Kingston-on-Thames.

(Read at the Wimbledon Gardeners' Discussion Class, November 8, 1875.)



THE Rose is at all times strikingly beautiful, but more particularly so during spring and the early summer months. Valuable at all times and seasons, it is especially so for the ornamentation of the conservatory, and I know of no more pleasing sight than that of a house furnished with well-balanced plants bearing deep green luxuriant foliage. So well do they associate and harmonize with other spring subjects, that it is of their culture in pots for this purpose, as well as for exhibition, that I narrate the method I have hitherto adopted with success, considering the limited means at my disposal.

Nearly all the Hybrid Perpetuals, Hybrid China, and Tea Roses do well in pots, and those who wish to procure a collection in the shortest space of time would do well to go to some nursery where this favourite is made a *specialité*, and select as many from the sub-joined list as means or convenience will admit. A very good time to procure them is in the month of September, when well established and useful plants can be purchased in eight-inch pots. As soon as possible after receiving them from the nursery, examine their roots, for it may be found that many of them will be benefited by a shift into ten-inch pots. This operation will also enable you to ascertain whether the drainage is in good order or not—a point that cannot be too strongly urged, for the Rose is very impatient of stagnant moisture at the root.

The following mixture of soil will be found suitable to them:—Good strong turfy loam, three parts (if laid up for twelve months, so much the better), the other part well decomposed cow-manure, leaf-mould, and silver sand; a sprinkle of bone-dust may be added with advantage, if at hand. Chop and mix the compost well together, and pot firmly. Place the plants in a cold frame or pit, taking care to give plenty of air by tilting the lights, and on all favourable occasions draw the lights entirely off. It is not warmth that is required, but a place of shelter from the heavy autumnal rains and very severe frosts. In these quarters they can remain until wanted to start into growth. It takes from eight to eleven weeks generally to bring Roses into full bloom from the time they are started, and if wanted in bloom during May, which is the month in which pot Roses are usually exhibited, the first week in March will be found early enough to start them. About the middle of February prune away all weak or watery growing shoots, and shorten the points of all the shoots, more especially such as are not well ripened; it is not necessary, however, to prune as hard as you would for a plant growing out-of-doors. Have at hand a ball of cord and some bast, or other tying material, in readiness for training the plants. Begin by placing



a string around the rim of each pot, then bring gently down the point of each shoot to the string, so that when all the branches are brought down they may be likened to an umbrella turned inside out ; this training or bringing down of the branches and twigs is indispensable, as it regulates the sap and causes them to break right back, thereby laying the foundation for good plants in future years.

If plants are not wanted to bloom until May they can be grown in a cold frame ; they must be encouraged into growth by keeping them close and syringing two or three times a day with tepid water. If rain-water is not procurable always, stand some pots of water in the sun to prevent that sediment which is so often found on the foliage of plants after using hard water. Keep them near to the glass in order to obtain as much light as possible, and keep them close until the buds begin to burst strongly all over the plants, when air must be given as weather permits. Carefully avoid cold currents, and always shut up early to husband the natural heat. In the morning you will be rewarded by finding the edges of the leaves covered with beads of dew, and all bearing a fresh and thriving appearance.

About this time the anxious grower will have to keep more than an ordinary look-out for that most hateful of all pests (to the rosarian), the Rose maggot, which coils itself in the half-expanded leaves, and, if not detected, drills its way into the hearts of the flower-buds, which are more or less injured, and fall off ; besides, the foliage will present a riddled and unsightly appearance. Wherever a curl appears there the enemy will be found lurking, and a simple pressure between the forefinger and thumb is the best way to settle him. Greenfly will sometimes be found troublesome, and if they cannot be kept under with the syringe, a smoking or two will soon settle them. I have invariably found, as the plants gained strength, that a good wash from a tolerably coarse rose watering-can was more effectual than syringing.

As soon as the buds appear well above the foliage the plants should be trained into a pyramidal shape, taking care to distribute regularly the flower-buds all over your plants. First have some neat sticks at hand, such as small osiers used in the making of baskets, which are suitable from their light green appearance. Place some of these sticks in a slanting position on the rim of the pot, and bring the lowest and most forward buds down to the sticks, carefully cutting away all the ties made when the plants were first pruned. Continue to bring each of the growing shoots to the sticks placed equally all over your plant, from the rim to the summit, until a nice pyramidal shape is attained. This training again balances the sap throughout the whole plant, and the result is a quantity of blooms at the same time, which is every exhibitor's aim, and which result could not be obtained were the plants allowed to take their course ; the stronger would outgrow and rob the weaker, and consequently bloom first. Should any of the buds show colour before the rest, many of the varieties will allow of something being tied around the bud, thereby to delay its opening, and in some cases cause an otherwise flat bloom to become cupped, as in the case of Anna

Alexieff. From the time the buds first appear manure water may be given freely, for when roots are well established the Rose is able to absorb strong stimulants. I generally give a mixture of the following:—Cow-dung, horse-dung, sheep-dung, a basket of each to about a peck of soot, and a six-inch pot of guano; the whole is put into a large tub and well stirred; when settled it is fit for use. If strong I dilute with water, and my plants have hitherto thriven well and carried good foliage as well as good blooms. As the plants come into bloom they will be benefited by a little shading from the sun.

When the plants have done blooming plunge them out-of-doors in a bed of coal ashes, or some other suitable material, cut off all dead flowers, and give copious supplies of manure water, or a mulching of rotten dung around them will answer the same purpose, for the watering and rains will wash it in. Most of the plants, if they have made good growth, will require a shift. This operation is best done from July to September, especially with the Tea Roses, although it can be performed up to the middle of October.

At the commencement of this paper I said that the quickest method of getting a collection was to purchase established plants in pots; but plants obtained as follows, although not fit for early blooming the first year, still may carry a fair supply of blooms. The first step is to take up from the garden or purchase some dwarf Roses and put them in eight-inch pots well drained. Plunge the pots to the rim in a partly spent hotbed, and keep them close for a few days; give one good soaking with clear water, and dew them over with a syringe on fine days, and in the course of a fortnight they may have air and be treated as recommended for the established ones, only that these should be pruned hard back in the spring.

If it is required to have flowers earlier in the season it will be necessary to prune them sooner than already stated, and also to introduce them into a genial temperature of fifty or sixty degrees, and, if convenient, a slight bottom-heat of ten degrees more will materially assist, but hard forcing should be avoided at all times, for it will be found detrimental to good blooms, the flowers coming very sparingly and puny.

There are three other enemies to the Rose besides greenfly, and the Rose maggot spoken of, which are the common mildew, the black mildew, and orange fungus. Sulphur is recommended for the first; for the second I know no cure, though it may sadly disfigure some of the foliage; for the third, less moisture and more air will, I think, prevent its spreading.

In conclusion, let me say to those who propose specimen growing, that they must possess great patience, and be exceedingly watchful, for a specimen pot Rose requires a great amount of attention to arrive at perfection. Some plants I purchased, as recommended at the commencement of this paper, two years since, are now in thirteen-inch pots, and from three to four feet in diameter; and I have bloomed them twice in succession in a cold Melon pit.

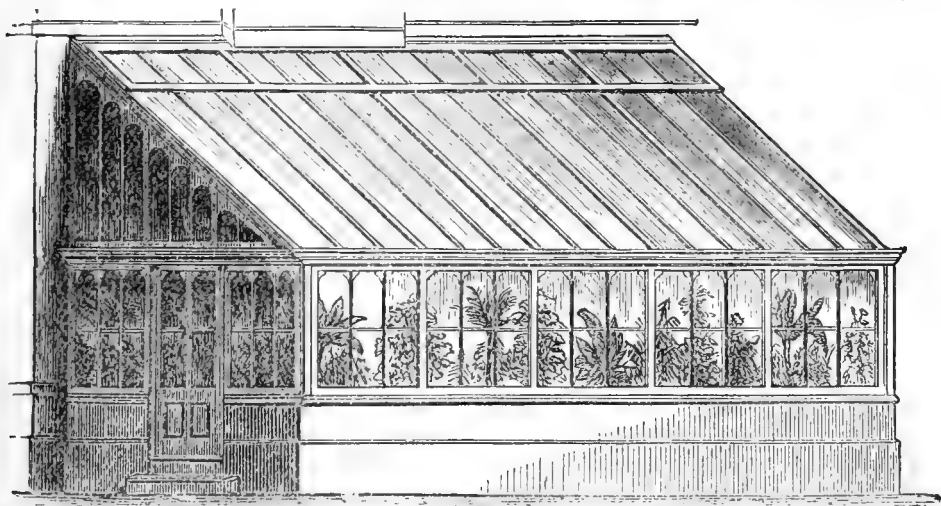
I append a select list of thirty varieties:—Anna Alexieff, H.P.; Beauty of Waltham, H.P.; Camille Bernardin, H.P.; Centifolia Rosea, H.P.; Countess of Oxford, H.P.; Duke of Edinburgh, H.P.;

Baroness Rothschild, H.P.; Edward Morren, H.P.; Général Jacqueminot, H.P.; John Hopper, H.P.; La France, H.P.; Madame Lacharme, H.P., white; Madame Victor Verdier, H.P.; Madame Thérèse Levet, H.P.; Maréchal Vaillant, H.P.; Marguerite de St. Amand, H.P.; Miss Ingram, H.C.; Paul Verdier, H.C.; Victor Verdier, H.P.; Charles Dawson, H.C. *Teas*: Céline Forestier, N.; Cheshunt Hybrid, Madame de St. Joseph, Madame Falcot, Madame Willermoz, Marie Van Houtte, Perfection de Mont Plaisir, Madame Bravy, Souvenir d'un Ami, Madame Margottin. There are not many Bourbons wanted while so many of the foregoing classes are at command, but we can scarcely do without Souvenir de la Malmaison, which is superb when nicely done as a pot plant.

### MESSINGER'S PATENT HORTICULTURAL BUILDINGS.



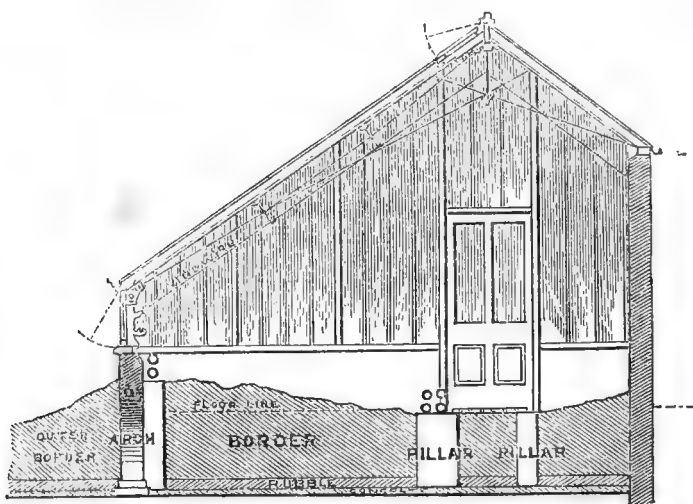
HE system of building fruit and plant-houses, invented some years since by Messrs. Messinger and Co., Midland Horticultural Building and Hot-water Engineering Works, Loughborough, has so fully realized the anticipations of the inventors, and satisfied the requirements of cultivators, that we shall be doing good service to our readers by giving a brief description of the principles on which their houses are built. We would say, first of all, that although their structures differ in principle from those of other builders,



MESSINGER'S LEAN-TO CONSERVATORY FOR VILLA RESIDENCE.

there is nothing fanciful about them, to give them a heavy, cumbersome appearance. Neither are they so light that they look as if a puff of wind would blow them down. The inventors appear, in working out their system, to have been fully alive to the importance of strength, elegance, and simplicity in the construction of hot-houses, and they have certainly succeeded in combining these important qualities in a remarkably happy manner. They have

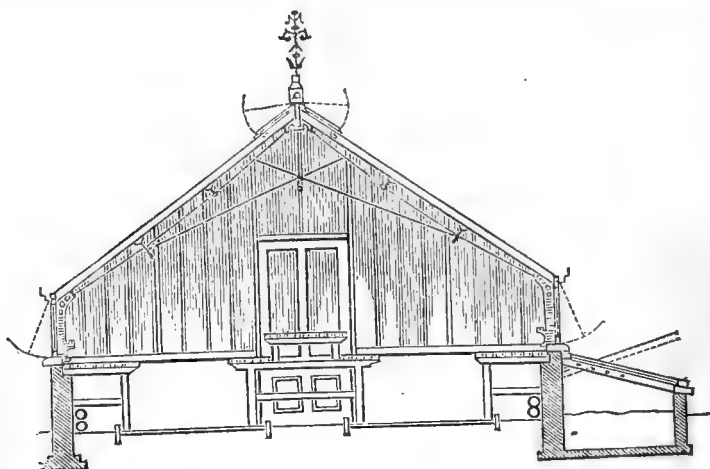
also succeeded in reducing the first cost in construction, without any diminution in strength and durability, which is a very important matter; for, unless glass houses are durable, they will be found to



[MESSENGER'S HALF-SPAN VINERY OR PEACH HOUSE.

be very dear, no matter how cheap they may be erected, for they will be in constant need of repairs, and not last, perhaps, half so long as they should do.

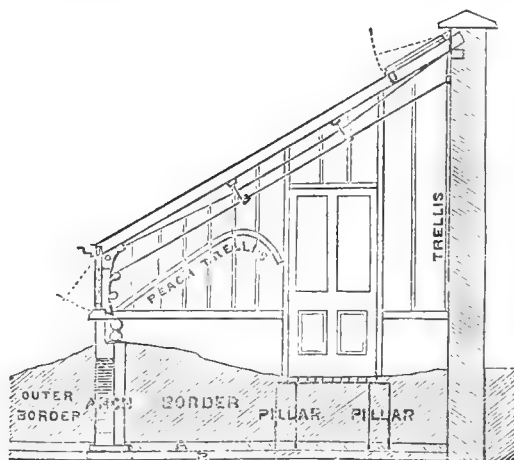
The chief point in the method of construction of Messrs. Messenger's horticultural buildings consists in a combination of wood



MESSENGER'S SPAN-ROOF PLANT-HOUSE.

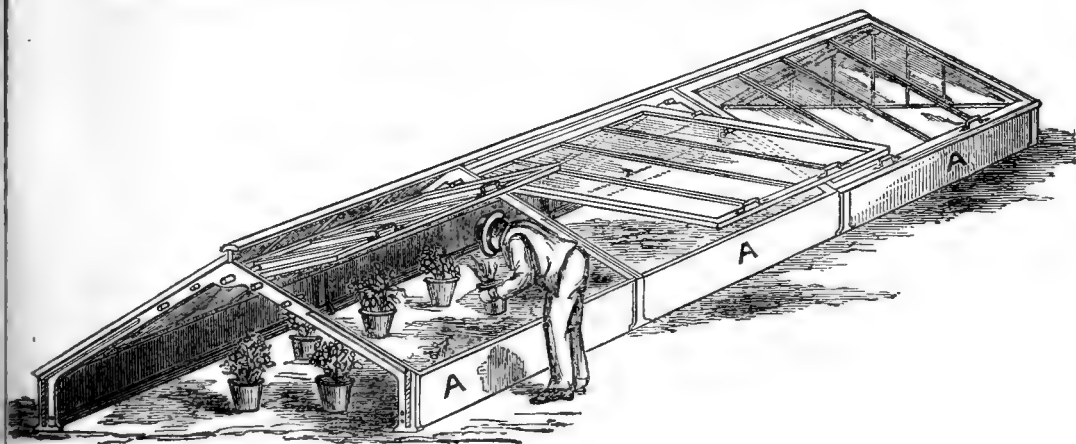
and iron. The woodwork is trussed, and carried on an improved form of interior iron-work, which takes all the strain off the wood; and by this arrangement it is possible to obtain an even greater degree of strength with smaller woodwork than is usually employed

in the erection of really substantial structures. This is a direct gain, for, by the employment of smaller timbers the cost is reduced, the durability is greater, and, as the houses are lighter, they have a more elegant appearance, and are better adapted for cultural pur-



MESSENGER'S LEAN-TO VINERY OR PEACH HOUSE.

poses, for the plants and fruits grown in them are more fully exposed to the beneficial action of the light. They are also less costly to maintain in repair, for the surface of wood to be painted is very small, and the ironwork is arranged so that should a rafter



or ridge sink through the ground settling in any part, a few turns of a nut by the gardener will set them right. The houses, in fact, are more durable, and less heavy in appearance than those constructed wholly of wood, and free from the disadvantages attached to iron houses, such as an excessive radiation of heat, and expansion and contraction of the bars, usually resulting in a large breakage of glass. Houses designed as "tenants' fixtnres," that can be removed

by the tenant on the expiration of the tenancy, are also constructed on the same principles as those of a permanent character, differing only in their portability.

The system of ventilating horticultural structures patented by the Messrs. Messenger is quite unequalled in its way for efficiency and simplicity. By a very simple arrangement, the turning of a small handle, fixed at one end, or in the centre of the house, the whole of the ventilators, from one end to the other, can be instantly opened to any desired extent, and as quickly closed again. This system of ventilation applies to top and side ventilators alike, and may be fixed to existing structures.

Messrs. Messenger have also introduced a boiler of their own invention, which combines the good qualities of the saddle and upright forms; and it has been found so thoroughly satisfactory, that it has attained an immense popularity, and there are now upwards of 3000 fixed in different parts of the country. It may be had of any size, heating from 300 to 3000 feet of four-inch piping. Messenger's Elastic-jointed Pipes are an immense improvement on those of ordinary manufacture, for, as the pipes are joined together with nuts and screws, an apparatus can be fixed in a tithe of the time required in fixing an apparatus when the joints are made with yarn and red lead or iron filings; consequently, a considerable saving of labour is effected—a matter of no small importance at the present time. But their chief value consists in the fact, that a small apparatus can be taken down and refixed in a few hours, without injury to the pipes. With pipes fixed in the ordinary way, it is very difficult and laborious work to refix a few pipes, because of the difficulty experienced in taking out the packing of the joints, and in removing this the joints are often broken, and the pipes rendered useless. But with the elastic joints it is only necessary to turn a few screws to separate the pipes or put them together again. We consider them of the highest value, for, with the assistance of an intelligent labourer, the amateur may, if so disposed, fix the pipes without the assistance of skilled workmen. Accompanying these remarks are a few illustrations of the simpler forms of structures erected in various parts of the country by this firm. These have been selected as alike suited to the requirements of the amateur and the practical gardener, for each of the structures is well adapted for the purpose for which it has been designed.

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### THE WORCESTER NURSERIES OF MR. RICHARD SMITH.



HERE are but few plant nurseries in the British Islands that equal in extent, and appointments, and management, those of Mr. Richard Smith, in the immediate suburbs of the city of Worcester. Any one unaccustomed to the commercial aspect of the plant trade would experience a difficulty in believing that the vast plantations here are designed simply to meet the regular and normal requirements of the market, so far as this particular nursery is concerned, for it might be reasonable in such a case to conclude that trees are grown here for hop-poles, for mine struts, and for the turners to cut into bobbins for the Manchester manufacturers. But the trained

eye would learn by a glance that the high culture given, the costly skilled attendance in training and pruning, and all that sort of thing, could never be repaid by appropriation of results to such rough purposes, and it is quite clear on the face of the whole business that the millions of trees and shrubs raised here are destined for parks and gardens, for orchards, streets, and ornamental woods and plantations. Nevertheless, the enormous extent of ground covered, and the splendid appearance of the stock throughout will compel the question to find a place in the mind—"Where does it all go to?"—and you would perhaps scarcely thank Mr. Smith if he opened his books and compelled you to find your own reply; for these nurseries meet only the settled every-day wants of mankind, and there is no romance hidden in the business details. Very large consignments are every season sent to the colonies, more especially to Australia and New Zealand; the Americans buy largely, and there is even a continental demand for some kinds of English trees. Nevertheless, the home trade is the mainstay of this great nursery, as of many others, and therefore a peep at such a place has more than a momentary interest, for it surely tells how deep and strong in the hearts of the English people is the love of homely rural life.

In a brief notice it is, of course, impossible to do justice to a visit we lately paid to these nurseries. But we will endeavour to convey a few of our impressions agreeably. We walked with Mr. Smith over some parts of the nursery during four hours, without a rest, and found that we had then seen only part of it. It is divided into four great sections by two main roads that cross each other at right angles, and measure each nearly a mile in length. It would occupy a week to go all over the place and see everything, for there are thirty-six miles of roads, and six miles a day is as much as any one can do in such a place, where a halt must be made every few yards for the inspection of something, and to make notes about it, and perhaps occasionally discuss its merits at some length. There are fifty acres of fruit-trees, and amongst them eight and a half miles of trained wall-trees. The roses cover twelve acres of ground, and the favourite stock is the manetti. Of ornamental trees the collections are immense, both as to variety and extent, as may be judged by the fact that there are 10,000 thorns in one plantation, and 10,000 of the variegated *Acer negundo* in another. There are 40,000 apple-trees and 20,000 plum-trees produced every year, and of fruit-trees in general the annual production is 160,000. While all kinds of trees are produced in quantity, they are produced in all kinds of ways for all kinds of purposes; but in the selection of stocks and method of budding, grafting, and training, Mr. Smith gives no encouragement to notions that are simply new, but does full justice to materials and methods that have had the test of time for the advantage of all his customers.

The demands for varieties in such a place are of necessity instructive. The 40,000 Apple-trees made every year comprise no less than 20,000 of Lord Suffield, a proof that in this district this is the most popular of all apples. The Worcester Pearmain will probably rank equal with it in importance, and may indeed take precedence of it on account of its exceeding beauty. Other kinds in great demand are Blenheim Pippin, Cox's Orange Pippin, Cox's Pomona, Mère de Ménéage, Golden Winter Pearmain, Ribston Pippin, Emperor Alexander, Ecklinville, Cellini, Northern Spy, Sturmer Pippin, Alfriston, Royal Russet, Winter Majeting. As a matter of course, there is scarcely an apple known to cultivation but is here to be found; but the foregoing fifteen varieties are special favourites, and their names will have an interest for all our readers. Of Plums, the great favourite is Victoria, of which 10,000 trees are made every year; but the following are in great demand: Orleans, Prince of Wales, Green Gage, Kirke's, White Magnum Bonum, Washington, Diamond, Prince Englebert, Damson. The favourite Pears are Jargonelle, Williams' Bon Chretien, Beurre d'Amanlis, British Queen, Beurré Superfin, Autumn Bergamot, Autumn Nelis, Beurré de Capiaumont, Brown Beurré, Louise Bonne of Jersey, Marie Louise, Beurré Diel, Gansel's Bergamot, Beurré Clairgeau, Althorp Crassane, Van Mous, Passe Colmar, Forelle, Winter Nelis, Huyshe's Victoria, Easter Beurré. The leading Peach is Royal George, and it is closely followed by Noblesse, Grosse Mignonne, Barrington, Walburton Admirable, and Lord Palmerston.

Amongst the many novelties to be found here, we made note of a house full of standard plants of *Euonymus Japonica*, the silver and golden-leaved varieties being especially valuable for conservatory decoration. Indeed, in the great range of

glass houses, any number of interesting things may be found. A new and handsome shrub, called *Othera Japonica*, is being grown in quantity, as it promises to add a quite novel feature to our gardens; it is a large-leaved, free-growing plant in the style of *Ligustrum lucidum*, and produces an abundance of scarlet berries. The *Golden-leaved Laburnum* makes a very distinct tree for the shrubbery, as it flowers freely, and its leaves are as yellow as its flowers. But the grandest of the novelties here is the glaucous variety of *Picea nobilis*, which is, beyond all question, the finest promenade conifer known to our gardens. This glaucous variety grows as freely as the normal green-leaved variety, and its colouring is exquisitely beautiful.

S. H.

## THE GARDEN GUIDE FOR JANUARY.

Look how the flow'r, which ling'ringly doth fade,  
The morning's darling, late the summer's queen,  
Spoil'd of that juice which kept it fresh and green,  
As high as it did raise, bows lows the head :  
Just so the pleasures of my life being dead,  
Or in their contraries but only seen,  
With swifter speed declines than erst it spread,  
And, blasted, scarce now shows what it hath been:  
Therefore, as doth the pilgrim, whom the night  
Hastes darkly to imprison on his way.  
Think on thy home, my soul, and think aright  
Of what's yet left thee of life's wasting day ;  
Thy sun posts westward, passed is thy morn,  
And twice it is not given thee to be born.

WILLIAM DRUMMOND of Hawthornden.

### THE FLOWER GARDEN

Simply requires to be kept tidy, for as regards work there is really not much to be done, but all earthwork and alterations should be pushed on whenever the weather permits, for interruptions and delays are sure to happen. The flowers to be looked for now, should the weather be mild for some time, are the Christmas rose, *Helleborus niger*, and its near relative, *H. olympicus*; the winter aconite, *Eranthis hyemalis*; the snowdrop, *Galanthus nivalis*; the coltsfoot, *Tussilago farfara*; the common primrose, *Primula vulgaris* (syn. *P. acaulis*); and the lesser celandine, *Ranunculus ficaria*. In the event of severe weather there will be no flowers at all out of doors, but if the temperature continues high for the season for some time, very many plants will come into bloom, and one of the most welcome will be the Italian coltsfoot, *Tussilago fragrans*, the delicious almond odour of which will drive dull care away.

### KITCHEN GARDEN.

The work here should be carried on with vigour, for the more ground you can get trenched up and manured now, the greater and the finer will be your crops of summer vegetables. It is usual to sow a few seeds on warm slopes and in frames this month, but we really think it better to wait until February. Be careful never to cut the heads of Brussels sprouts until you have got all the good buttons, but you may now take the heads of all other winter greens that are worth cutting.

### GREENHOUSE AND CONSERVATORY.

It is very important to hit upon the right temperature for everything under glass now, for we do not want anything to grow, but on the other hand, we do want to keep everything in health. The days are still so dark and short, that if plants are forced into growth by heat, the growth will be weak, and thin, and comparatively worthless. But plants in flower, and plants coming into flower, must have warmth enough and all the light possible. When you look round at this time of the year, just rub a finger here and there on the glass inside the house, and if the finger is soiled, you may safely declare the glass wants cleaning. Light is life to all organized creatures, but more especially to plants. Men and horses may thrive in a coal mine, but neither pine trees nor pumpkins will grow there, and the men and horses require food that is, in the strictest sense, the product of sunshine. You hear (and see) how strikingly perfect one man's plants are, while another can only grow middling stuff, or only rubbish. Now one step towards good plant



growing is to keep the glass clean, for light is as needful as water to plants, and they rarely get enough of it.

#### FRUIT GARDEN.

Planting may be carried on as weather permits. It is not too late to put in cuttings of burr knots and bush fruits. Plantations of fruits that have borne well for many years, should now have a thick coat of fat manure spread over.

### NEW BOOKS.

**DARWIN ON CLIMBING PLANTS.**—THE MOVEMENTS AND HABITS OF CLIMBING PLANTS. By CHARLES DARWIN (*Murray*).—The inquiries of Mr. Darwin into the characteristics of climbing plants have in several ways been brought under public notice, but not in the complete and systematic manner in which they are presented in this delightful little volume, of which the second edition is now before us. The lover of plants who needs but casual and accidental observation of their various modes of development cannot attain to anything like a perception of the world of wonders into which such men as Mr. Darwin force their way. Not many, perhaps, are aware that twining and climbing plants revolve with the regularity of clock-work, and indeed would but rarely obtain the support they require, were they not constantly sweeping the air in circles with their slender, lengthening stems or tendrils. An initial movement, consequent, perhaps, on the more rapid growth of one side of the stem than on the other, is combined with a sensitiveness that causes a contraction and thickening of the prehensile parts as soon as contact is established, appear to be the principal characteristics of these plants, considered solely as climbers. Mr. Darwin considers them the most highly-organized members of the vegetable kingdom, and seems inclined to claim for them some higher attribute than what is generally understood as "vegetable instinct." There is always one comfort in reading the books of this earnest philosopher, and that is, that he loves facts, acquires facts by patient labour, relates facts with wonderful clearness and precision, and makes of his well-proven facts the backbone of his treatise, whatever his theories on the subject may be. As a lesson in natural theology, his treatise on climbing plants is invaluable; and although Mr. Darwin nowhere abandons his long-cherished ideas on evolution, we find him here discussing the object of a plant in climbing, its selection of the means whereby to climb, and its capability of varying its mode of procedure to suit variations of conditions. He thus labours with the earnestness proper to a lover of truth to make the climbing plants testify that "the hand that made us is Divine."

**FLORAL DECORATIONS FOR THE DWELLING-HOUSE.** By ANNIE HASSARD (*Macmillan*).—Our readers have so many times been aided in their employment of floral decorations in the household by the taste and experience of Miss Hassard, that they will not need to be informed of her eminent capacity for the production of a systematic treatise on the subject. The truth is, the gifted author of this work stands alone and far in advance of all competitors, whether as an exhibitor or a judge of exhibitions, whether in the preparation of a bouquet for a princess or the decoration of a grand saloon for an important public ceremony. Fortunately Miss Hassard wields the pen with facility, and the result, in the case before us, is a series of descriptions and directions that convey the fullest and clearest information possible by means of writing; and whoever follows faithfully what is here set forth, must soon become proficient in the employment of flowers and fruits for decorative purposes. The low price of the work (5s.) brings it within the range of a large class who cherish refined tastes, but have not the means for extravagant display.

**RAMBLES IN SEARCH OF SHELLS—LAND AND FRESHWATER.** By T. E. HARTING (*Van Voorst*).—This is a very handy and peculiarly concise guide-book to the shells commonly met with in gardens, fields, woods, and watercourses, and consequently will be of great value to lovers of the country who are not well versed in the humble departments of conchology to which snails, and mussels, and limpets belong. The style is gossipy, but conveys an immense amount of information, and there are some nicely-got-up coloured plates, by the aid of which many of our garden and woodland snails may be identified, and their histories traced with little difficulty. The culture of edible snails is treated of; so those who wish to be epicures in snails may have reason to thank Mr. Harting.

## HORTICULTURAL AFFAIRS.



**ROYAL HORTICULTURAL SOCIETY.**—The meeting of the Fruit and Floral Committee, on the 1st of December, was a very small affair, for there were but few novelties, and, owing to the severity of the weather, the usual number of miscellaneous contributions from the nurserymen in the neighbourhood of the metropolis were not forthcoming. One of the most important contributions was samples of the collection of onions grown at the Society's gardens at Chiswick last year, and which are described in Mr. Barron's report on another page of the present issue of the *FLORAL WORLD*. On the 9th of December a special general meeting of the fellows was held at South Kensington, Lord Aberdare in the chair, to discuss the proposal of the Council to make several alterations in the privileges of the fellows, and, after a long discussion, a resolution was passed requesting the Council to re-consider their proposal.

**THE "GARDEN ORACLE,"** which has now reached its eighteenth year of publication, has, for its special feature, an essay on the Water Garden. In addition, it contains papers on a new system of pruning fruit trees, and on other matters of importance to the amateur and professional horticulturist. The lists of new plants and garden flowers are as full and complete as usual, and the selections of fruits, flowers, and vegetables, which have long been one of the most valuable features, have been carefully revised, and will be found of the utmost value to purchasers who have but few opportunities for determining the merits of new introductions.

**A NEW INSECTICIDE.**—At a recent meeting of the Royal Horticultural Society, the Hon. and Rev. J. T. Boscawen called attention to his insecticide, which consists of camphor dissolved in methylated spirits to saturation, and mixed with soft soap to the consistence of cream. When diluted so as to be fit for use with a syringe, this had been found a most efficacious substitute for fumigating in the case of mealy-bug, scale, red spider, etc.

**NEW CHRYSANTHEMUMS** have appeared in numbers far too few and at intervals much too long during the last few years. The best of this season is without doubt an intermediate variety named *Miss Wheeler*, lately exhibited in London by Mr. H. Cannell. The flower is in form a replica of Mr. Murray, the colour being a peculiar kind of puce carmine, with a hint of gold in the centre. For specimen culture it will no doubt prove acceptable, and it will certainly be useful for decorative purposes, for under gaslight it is very distinct and telling. Another novelty in Mr. Cannell's possession is *Lilac Gem*, a small pomponé of the Duraflet class, the colour clear pale lilac with yellowish centre; the plant is as free as could be wished, and very cheerful and pleasing. *Golden George Glenny*, a bright yellow, incurved flower, is also most valuable because of its fine habit and the excellency of its flowers. It is precisely the same as *Mrs. George Rundle*, excepting in colour.

**A VARIEGATED PALM.**—At the exhibition of the Ealing District Chrysanthemum Society, Messrs. H. L. Smith and Co., of the Ealing Dean Nurseries, staged an example of *Lavinia Borbonica*, some of the leaves of which were distinctly flaked with creamy white, and the appearance of the young foliage led to the assumption that the variegation would become general over the surface of the leaves. It is quite a young plant and had a robust habit.

**"WHITE'S SELBORNE"** will appear in two forms. Messrs. Macmillan announce as ready the long-promised edition edited by Lord Selborne and Frank Buckland. The book ranges with "*Holland House*." Mr. J. Van Voorst announces an edition by Professor Bell, assisted by Lord Selborne and Mr. Curtis, of Alton. This contains one of White's sermons, a specimen of his garden calendar, and a correspondence of his brother with Linnæus.

**THE WESTMINSTER AQUARIUM COMPANY** are making arrangements for a series of flower shows next summer, and for a fruit show in the autumn.

**INFLUENCE OF STOCK ON SCION.**—M. J. Van Driessche, of Ghent, has, as we learn from the *Revue de l'Horticulture Belge*, grafted *Abutilon Darwinii* on to the variegated *A. Thompsoni*, with the result that the leaves produced on the scion became variegated also, as in the form called *A. tessellatum*. This is by no means unusual, for other species grafted on *A. Thompsoni* have been influenced in a similar manner.

**CLIVIA GARDENI**, a plant closely related to *Imantophyllum*, has flowered in the

succulent-house at Kew. The leaves of the two genera are much alike, and they do well in company under the same treatment. The flowers of the *Clivia* are very distinct and ornamental, and being produced in the winter, it is a subject of much value for decorative purposes. This specimen is growing in an 18-inch pot, had about a dozen umbels, averaging each the same number of pendulous flowers. The segments are orange-red, the mouth pale green.

**PRESERVING THE COLOURS OF DRIED FLOWERS.**—M. Boulade, in the *Cultivateur de la Région Lyonnaise*, recommends the following plan for preserving the colours of flowers in the dried state: Place the flowers between several sheets of unsized paper—filtering paper; place these sheets between two fire-bricks, and place the whole in a stove or oven heated to 60° to 70° Cent. Change the papers after an hour. After two or three hours the flowers will be sufficiently dried, and their colours preserved.

**MR. B. S. WILLIAMS**, of the Victoria and Paradise Nurseries, Upper Holloway, has recently received the prizes awarded him at the International Horticultural Exhibition held at Cologne in August last. These comprise a gold medal, a silver medal, and three bronze medals, and the Prize of Honour given by the Crown Prince and Princess of Prussia. This magnificent prize consists of a clock, a pair of candlesticks, and a pair of vases in Meissenia ware, and of the estimated value of £70.

**CURE FOR SICKLY POT PLANTS.**—The *Bulletin Horticole de Soissons*, on the authority of M. Willermoz, gives the following cure for sickly pot plants, which he states has been pursued for some years with unfailling success by M. Lucas, of Hohenheim. It is recommended in the case of plants which have become sickly through over watering, planting too deeply, etc. Amongst the plants so treated were Palms, Roses, *Ficus elastica*, and others. Instead of changing the soil it is well stirred and soaked with water, heated to a temperature of 130° to 144° (Fahr.) until it runs off freely from the bottom of the pots. After a few days the sickly plants recover their original look of health and vigour, and begin to grow again.

## TO CORRESPONDENTS.

**MACROZAMIA SPIRALIS.**—*G. L., Great Yarmouth.*—This elegant cycad may be grown most successfully in a warm greenhouse or conservatory, and when in a thoroughly vigorous state it may be wintered in an ordinary greenhouse temperature without injury. It should be potted in a mixture of turfy peat and loam in equal quantities, and one part of sand to every four parts of the mixture. The pots must be well drained, for when the soil is water-logged the roots soon decay, and the plants become unhealthy. Your plant is unquestionably in an unhealthy state, and we would suggest that the drainage be examined, and the plant, if in a cold greenhouse, be removed to a structure in which it will enjoy a greater degree of warmth. If the stem has no leaves, it is, perhaps, quite dead.

**HEATING SMALL GREENHOUSE.**—*F. B., Leeds.*—The stoves made to burn mineral oil are very useful for keeping the frost out of small greenhouses. The products of combustion are in no way injurious to the health of the plants, provided the flame is clear. These stoves are made by Messrs. Hincks, of Birmingham; Honey, of Oxford Street, London; Deitz & Co., Carter Lane, City, and others; and they may be purchased at first-class ironmongery shops.

**BEDDING PLANTS.**—*K.S.*—Zonal geraniums intended for bedding purposes require very little moisture at this season of the year to maintain them in the most perfect health. It is not desirable they should make much growth during the month of January, for they start more vigorously into growth on the approach of spring when they have enjoyed a thorough rest during the winter. They will take no harm if the soil becomes quite dry, and remains so for a week or ten days. The verbenas, heliotropiums, petunias, and other plants of a similar character, should be kept rather moister than the geraniums, but even these must not be over-watered. The potting off may commence early in February, and the work be then pushed on briskly, to have it completed before the rush of spring work requires attention.

**FORCING AZALEAS.**—*A. W. Simpson.*—We would advise you to select plants that are well set with flower-buds, and to place them in a suitable temperature at once. They may be placed in the plant stove or the forcing-pit, direct from the greenhouse, but it is much better, if it can be done conveniently, to place them in

an intermediate-house, with a temperature of about 55° for a fortnight or so, and then remove to the forcing-house, as the buds then swell and expand more kindly. When in the forcing-house, they must be watered liberally, and syringed overhead with tepid water once a day. The syringing must be discontinued as soon as the buds are developed sufficiently to show the colour of the flowers. Ill-shaped plants should be selected in preference to handsome specimens, that is, if they are required simply for furnishing cut blooms, for after all the flowers have been gathered, the plants can be pruned into shape, and encouraged to make a strong growth. The pretty little hardy species known as *Azalea amana*, is very useful. The small trusses of its rich purple flowers are well suited for bouquets, and the plants themselves are very ornamental when tastefully arranged in the conservatory with other early flowers; cuttings of the young shoots just as they are becoming firm strike very freely, and in about three years neat little bushes may be had.

*A.H.R.*—No 1 is probably *Pteris scaberula*, and No. 2 has the appearance of *Polypodium effusum*. As the fronds received are not fertile, it is impossible to speak positively in reference to the names; and if fronds in fruit are sent, we shall be happy to give them due attention.

*VINERY AMATEUR.*—*P.B.*—As all the grapes are gathered, the vines should be pruned and dressed. Where not done now, that work is pretty well at a standstill, there is a risk of its being delayed until after the circulation of the sap is active, and the risk is great of the vines suffering from a loss of sap, technically known as "bleeding." As the vines have in past years been trained on the spur system, the laterals, or side-shoots, should be pruned to the first prominent bud from the base, and this, as a rule, will be the second bud. The cut should be made in a slanting direction, about half an inch above the bud. When the pruning is completed, remove all loose bark from the main rod, as it affords a harbour for insects. But bark that is at all firm must not be removed. Wash the vines thoroughly with hot water and soft soap, the soap to be used very sparingly indeed, and after the washing is completed, paint the vines with Gishurst Compound, prepared by mixing the compound with hot water at the rate of six ounces to the gallon.

*WINDOW FLOWERS.*—*Commelina* may shift the cyclamens now into larger pots, provided they can be kept somewhat warm to help the roots to find their way into the new soil. In turning them out of the small pots care must be taken not to injure the roots in the least, and it is not necessary to remove the crocks. Your delicate kinds of iris will do well in peat with a fifth part sand. It is a good plan to let them remain two years in the same pots.

## TRADE CATALOGUES.

WILLIAM CHATER, SAFFRON WALDEN.—*Catalogue of Hollyhocks.*

JAMES COCKER AND SONS, SUNNY PARK AND FROGHALL NURSERIES, ABERDEEN.—*Descriptive Catalogue of Trees, Shrubs, Roses, etc.*

WILLIAM CUTBUSH AND SON, HIGHGATE NURSERIES, N.—*Catalogue of Select Chrysanthemums.*

AUGUSTE VAN GEERT, GAND, BELGIUM.—*General Catalogue of Palms, Orchids, Ferns, Trees, and Stove and Greenhouse Plants.*

JOHN HARRISON, NORTH OF ENGLAND ROSE NURSERIES, DARLINGTON.—*Catalogue of Select Roses.*

LOUIS VAN HOUTTE, GHENT, ROYAL NURSERIES. BELGIUM.—*Catalogue of Ornamental Trees, Shrubs, Fruit-trees, Roses, etc.*

THE LAWSON SEED AND NURSERY COMPANY (LIMITED), EDINBURGH AND LONDON.—*Catalogue of Forest Trees, Shrubs, etc.*

MESSINGER AND CO., HORTICULTURAL BUILDERS, LOUGHBOROUGH.—*Illustrated Catalogue of Hothouses and Boilers.*

MAISON PANTZ ET FILS, METZ.—*Catalogue of Horticultural Erections.*

WILLIAM CHATER, SAFFRON WALDEN.—*Catalogue of Hollyhocks.*

ROBERTSON AND GALLOWAY, 157, INGRAM STREET, GLASGOW, AND THE HERMITAGE NURSERIES, HELENSBURGH.—*List of Roses.*

CHARLES TURNER, ROYAL NURSERIES, SLOUGH.—*Illustration and Description of Pea, Dr. Maclean.*

LOUIS VIEWEG, WEGETEBEN, GUEDLINBURG, PRUSSIA.—*Catalogue of Flower Seeds.*





AMARANTHUS. PRINCESS OF WALES.

## CULTIVATION OF THE AMARANTHUS.

(With Coloured Illustration of *Amaranthus Princess of Wales*.)



THE species and varieties of *Amaranthus* now in general cultivation differ much in character and style of colouring, although they are all valued for the attractiveness of their foliage. Some are of dwarf stature, and more or less rigid in growth; whilst others attain a considerable height, assume a handsome pyramidal form, and have long, narrow, pendent, and richly-coloured foliage. To the latter class belongs the very beautiful *Amaranthus Princess of Wales*, which has been selected for figuring in the FLORAL WORLD for the present month. This splendid hybrid was raised in 1874 by Messrs. Hender and Son, Bedford Nurseries, Plymouth; and during last year it was subjected to a thorough trial, and found to possess qualities of the highest class for decorative purposes, and to surpass in some respects *Amaranthus Henderi*, distributed by the same firm in the early part of 1875. The illustration very faithfully represents the character of the plant, and the colouring of the leafage; but it is impossible to obtain an adequate idea of its immense attractiveness without seeing a nicely-grown specimen. Under ordinarily good cultivation, the plants attain a height ranging from two to four feet, branch freely, and form elegant pyramids of the most richly-coloured foliage. The leafage is so light, and the outlines so elegant, that the plants may be likened to a miniature fountain. The leaves vary in length from four to ten inches, and the centre of the leaf is brilliant carmine, the tip olive green, and the remainder bright yellowish orange, veined with pink; and as the carmine and orange tints are more or less transparent, the plants produce a most brilliant effect when under the influence of artificial light, and are of the highest value for the decoration of the dinner-table. Indeed, for those who require plants that can be easily multiplied, it is, perhaps, one of the most useful table plants that could be mentioned, for a stock can be most readily raised from seed. *Amaranthus Henderi*, also raised and sent out by the Messrs. Hender, has leaves of greater breadth, and is intermediate in character between *A. elegantissimus* and *A. salicifolius*, and may be said to possess the brilliantly coloured foliage of the former with the elegant pyramidal habit and flowing outlines of the latter.

The cultivation of the two *Amaranthuses* mentioned above for the conservatory and the dinner-table is not difficult, and amateurs may, by following the few directions that will be given, produce a stock of first-class specimens. The first week in March may be mentioned as a most suitable time for sowing the seed, but it is a matter of no great importance whether it is sown a few days earlier or a week or two later; but those who have not the convenience of a propagating pit, or cucumber frame at work, should not sow before March; for to insure well-developed specimens a vigorous growth from the first is necessary. Sow the seed in pans filled with a mix-

ture of loam, leaf-mould, peat, and sand, and cover lightly with fine sandy soil. A propagating pit is the most suitable place for the seed-pans, as the bottom-heat is most conducive to quick germination; but they may be placed in any of the frames or houses in which a temperature of  $65^{\circ}$  or  $70^{\circ}$  is maintained.

With the warmth recommended, the young plants will not be long in making their appearance, provided the soil is maintained in a nice moist state; and when they are about an inch in height, they should be pricked off into other pans, prepared in much the same manner as for sowing the seed, and put an inch or so apart. By pricking them off as here advised, the risk of their being injured by over-crowding is avoided, without the necessity for putting them into separate pots whilst of a very small size. By the time the plants touch each other in the pans, have in readiness a compost consisting of fibrous loam and peat two parts each, leaf-mould and well-rotted manure one part each, and about half a part of sand. They must be lifted carefully out of the pans, and those required for large specimens be put into large sixties, and those intended for the decoration of the dinner-table into small sixties; or, if more convenient, the smaller size only may be employed. During the first ten days or so, they will receive material assistance from a moderate shade, a close, moist atmosphere, and a temperature of about  $70^{\circ}$ . But as these conditions are those most favourable to the production of a long-jointed growth, they must, as soon as they are nicely established, be fully exposed to the light, enjoy a moderately free circulation of air, and a temperature ranging from  $65^{\circ}$  to  $70^{\circ}$ . Should the weather be bright and warm, it will not matter if the temperature reaches to  $70^{\circ}$  or  $75^{\circ}$ , provided the structure is freely ventilated. After the stock has been potted singly, the subsequent management will consist in shifting them into larger pots, as more space is required for the roots, and supplying them with water. Five and six inch pots are the most suitable sizes for those intended for the dinner-table, and those eight and nine inches in diameter for the portion of the stock required for the decoration of the conservatory. It is important not to allow them to become pot-bound until they reach the largest-sized pot in which it is intended to put them; and also, after they are established in the small pots, to place them in a light, airy pit or house.

When required for bedding purposes, sow about the middle of March, and proceed in much the same manner as advised for the specimens, until they are potted off into three-inch pots. When arriving at this stage, gradually harden off, and, at the end of May, plant in the beds at a distance of eight inches apart. *Amaranthus melancholicus ruber*, one of the best of the dark-leaf bedders that can be raised in quantities from seed, should be grown in precisely the same manner. The seed of this useful bedder is often sown too soon, and in consequence the plants exhaust the nourishment contained in the soil long before they can be planted out, and become so stunted, that they seldom produce a thoroughly satisfactory effect.

G. G.



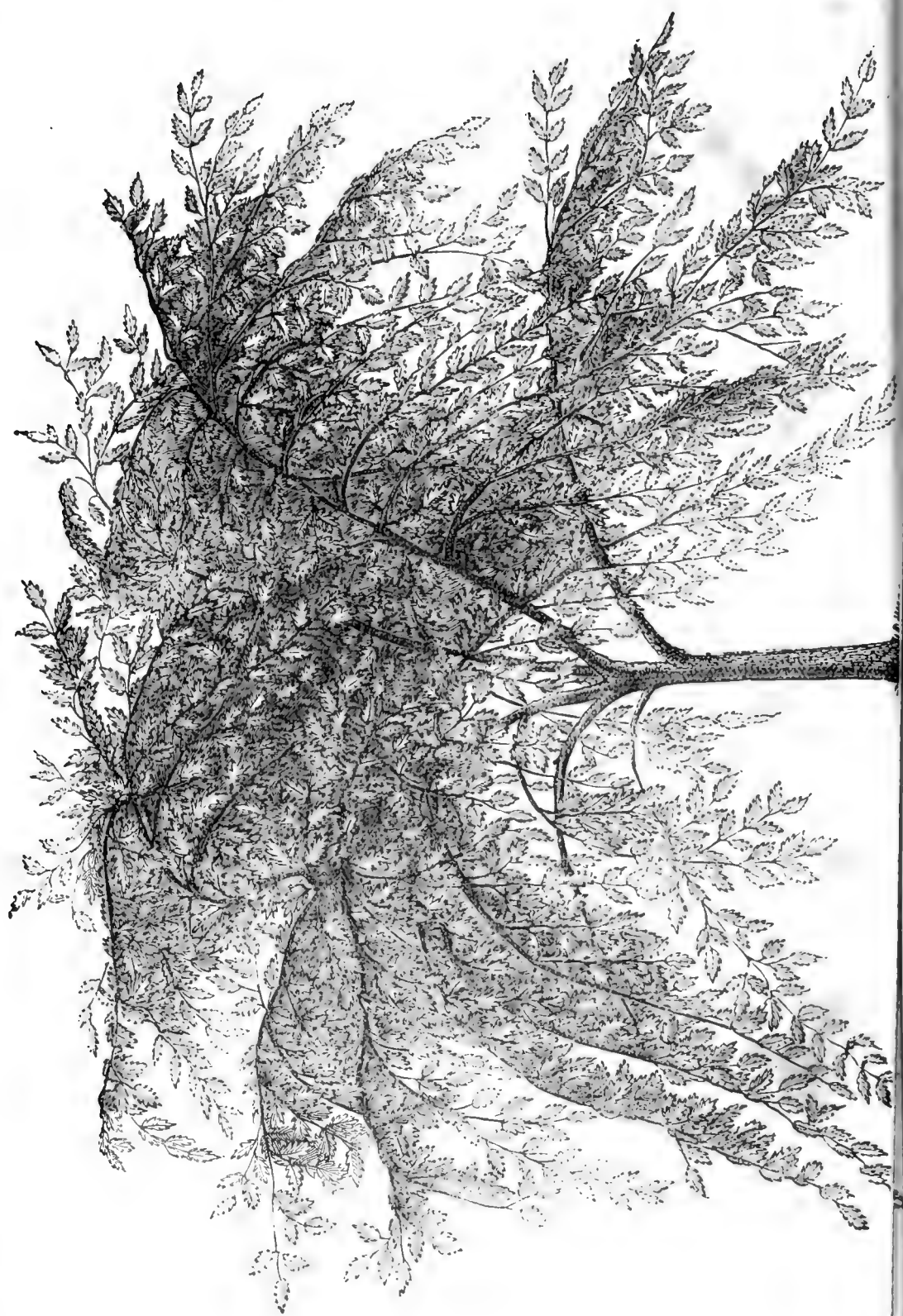
## WEeping TREES.



AMONG the trees of this country there is not a really ugly one to be found. There are ugly trees, no doubt, but they are in miserable foreign countries, where the people breakfast on cold missionary, and eat salads without oil, and do other dreadful things that degrade them below the possibility of appreciating the beauties of nature. Perhaps the most beautiful of all our trees are those in which there is more or less of a pendulous habit; and with the increase of the pendulous habit there is increased refinement, and a departure from the picturesque to the gardenesque—these two “esques” standing for nature and art respectively, and the relations of the eye and the mind to both. I shall not be singular in selecting the beech as my favourite of all the trees of Britain. To endeavour to establish pre-eminence for the oak is to miss the mark altogether, and betrays, not so much a want of judgment as a want of knowledge; for it ought to be understood, before we begin judging, that hardness of outline is incompatible with beauty, and the oak is therefore no competitor with the beech, however much it may win our admiration for its representation of the ideas of strength, endurance, fixity, unchangeableness; for the oak is an emblem of all these qualities, but its whole expression is that of power, while the expression of the beech is pre-eminently that of beauty. The silvery bark, the glossy leaves, the spreading, lofty growth, the infinity of arcs of all degrees of which its branching lines are made up, and the general tendency of the external growths to weep, or, as Gray better expresses it, to nod—these are characteristics which entitle it to be called the Queen of Forest Trees, as the oak has long ago been proclaimed the king.

From “yonder nodding beech,” to the carefully-trained, tied-down, hard-pruned, umbrella-shaped weeping ash, what a transition! It is of just the same kind as the transition from the falls of Lodore, that tumble and divide, and rush this way and that way—a wild accumulation of ellipses that change momentarily, yet are ever the same, to the prim spick-span fountain with two and thirty jets, and a prince’s feather, that adorns the terrace in Mr. Virtuoso’s garden. Some lovers of trees frown upon the umbrellas and shuttlecocks, but that is neither my business nor my taste. I do oftentimes wish people would not prune and train their weeping trees so hard and formal; but the most formal, if the growth is luxurious, and the form is well made out with furniture, are beautiful objects; and a few of them—three at most—may be allowed to come within the field of vision at one time, if one of the three is entirely different in style to the other two.

For large work we want large trees, and for avenues and masses we have some very noble subjects among weeping trees. There is the weeping beech, *Fagus sylvatica pendula*, a tree of vast growth and bewitching form, yet quite a garden tree, because all its parts are refined. Its very leaves are objects of beauty, its bark, its pointed buds; it is beautiful all over, like virtue and innocence.



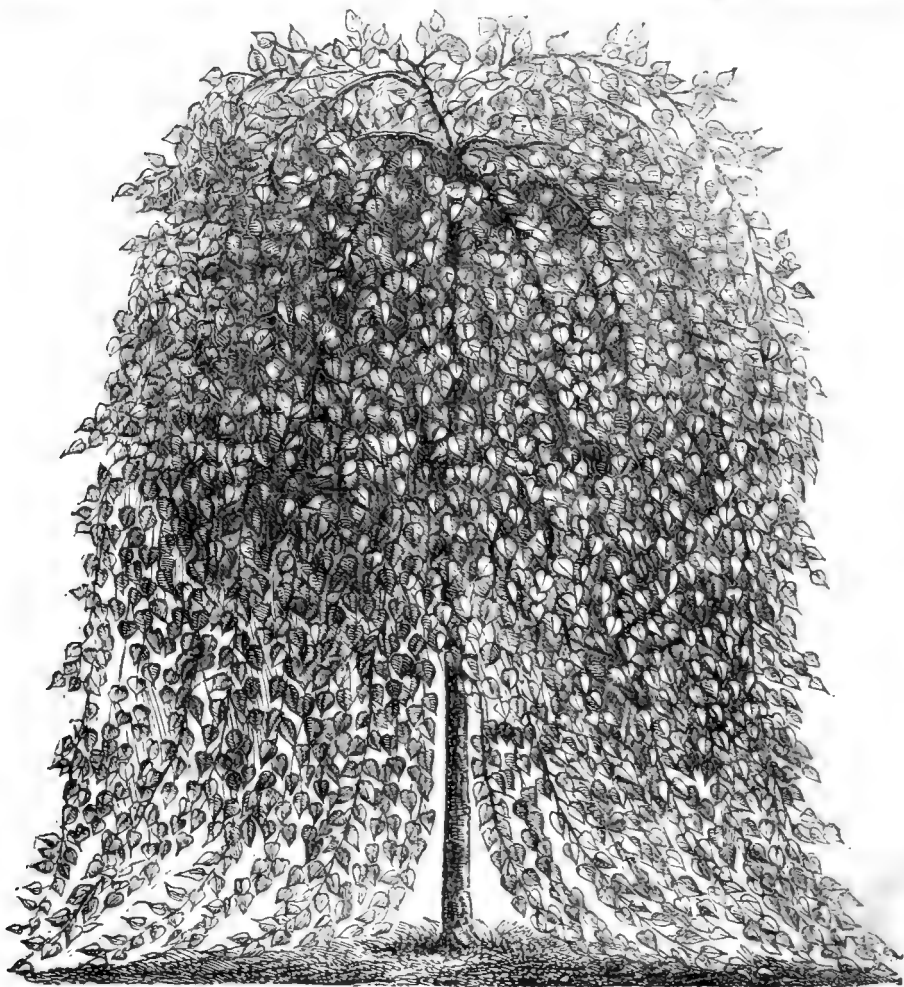
Another and less grand subject is the weeping lime, *Tilia Europæa pendula*, which resembles the common lime in every particular, except that the branches all tend downward ; and if knives and hatchets can be kept away from it, the branches sweep the ground all round in a most graceful and beautiful manner.

For a third subject in this series, what can we have better than the weeping Wych elm, *Ulmus montana pendula*, with its fine dark colour, and grand half-weeping, boldly-spreading, almost dome-like form, yet always free, and the lines escaping here and there with delightful nonconformity, as if Nature would say, "This is not a tent, or a dome, or a sugar-loaf, or a malt-kin, but a *tree*—yes, A TREE." You want a great breadth of grass, and true English planting all round about, to bring out the beauty of this magnificent tree as it deserves. It is a fit tree for the skirts of a promenade, but it is not a promenade tree ; no, there is not enough of rigidity in its pliability, nor of hardness in its softness, nor of severity in its free and wilful grace, to make it quite a promenade tree ; but for the eye to escape from gravel, stone, burning breadths of colour, and the frippery of fashionable talk, by way of such an intermediary as this, is as glorious as can well be if promenades are recognized, and we dare ever turn from the beauty of human kind, and all that is persuasive in promenading, to give the eye a wider range amongst the persuasions of light and shade, and comminglings of form and contrast and harmony of colour that make up the sum of our delights in the admiration of trees.

The Weeping Ash, *Fraxinus excelsior pendula*, will not tell in masses as weeping beeches and weeping limes do. It must stand apart, and assail our powers of criticism or æsthetics by its own individual merits. And it has merits, though few know what those merits are. The stiff and trim way in which the weeping ash is usually grown gives no idea of its capabilities, or the true nature of its beauty. An old weeping ash that has never been pruned or trained, is one of the most wonderful objects in the vegetable kingdom. There is such a one in Mr. Beresford Hope's park, Bedgebury, which is so bewitchingly beautiful, that every artist who sees it for the first time is inclined to tear up all the sketches he ever made of trees, and pass the remainder of his days at Bedgebury. This tree has not been trained for an arbour, or to look like a dome ; it has trained itself in its own way, and it combines all the grand lines and falling masses common to cataracts. In some places it tumbles over wildly ; in others it flows forward in a rippling sheet of shiny leaves ; in others it leaps, and again it spreads out softly like a train of skirts of wondrous amplitude, which sweep the ground, and actually rustle as if the vegetable cataract, made silent for ever, had put on queenly garments, and would now brush the dews it was doomed never to augment. Yet though this tree, when aged and untrained, is so indescribably beautiful, the tea-garden pattern to which they are grown in all the gardens near London is not to be despised. The shade of such a tree is vastly more agreeable than that of a hot summer-house or shed, and very often the spread of the branches affords the only

suitable spot for a fernery, and the tree and the ferns together make their owner happier than many another combination that might be guessed at.

If another subject of the very choicest kind be wanted, we may find it in the Weeping Aspen, *Populus tremulus pendula*, which, if allowed its own way, grows like the locks of Lady Godiva, and furnishes a delightful comment on the text, "Nature unadorned is adorned the most." The tremulous poplar is a beautiful tree any day. How bravely an old tree throws its arms about, as if conscious



POPULUS TREMULA, P. PENDULA.

that they are hung all over with trembling leaves, that flash like discs of bright metal as they tremble perpetually as if with an overpowering sense of joy that the warm summer has again embraced them. A bad metaphor is better than one that suggests a painful thought; why, then, did the ancients picture the aspen as thrilled with horror about something? It may just as well tremble with joy as with any other feeling. Moore hit the mark when he wrote—

“ The wind, like a lover,  
Woos the young aspen trees till they tremble all over.”

But all this applies to the aspen proper; here we have a sort of aspen improper, or, at all events, remarkably artistic, and approaching to that severity of outline which fits a tree for special, and unfits it for general uses. But let the picture speak for the rest. Is it not, in its way, a most elegant object?

Once more for a smaller object, *Sophora Japonica pendula*. This is pre-eminently a lawn tree, and makes a better effect when used in well-balanced pairs than when planted singly. I can imagine a repetition of these on either side of a terrace-walk, at distances of about twenty feet apart, having a fine effect, and giving exquisite finish to the planting, but I never saw it so used.

Once more, the American Willow, *Salix purpurea pendula*. It is a toy tree, and the way to have it near a fountain would be to get a standard six to nine feet high, and plant it at once, or within a week or two, and carefully stake it to keep it upright until established. Perhaps then it may need help with three lengths of No. 1 iron wire, drawn out to stakes driven in like tent-pegs, the wires being at an angle like tent-ropes, and the tree having the protection of a piece of tough sacking where embraced by the wires close under the head. This support is literally invisible, and therefore dangerous if used on a grass-plot, where a person might chance to fall over it in passing near the tree; but if it can be adopted without danger to any one, it is far preferable to stakes of any kind. It is a willow of very light make and wiry growth, the stems reddish, the leaves light green, and the leaf-stalks reddish like the stems. In growth it is very fountain-like, and is truly a fountain tree.

There are many more good weeping trees. Connoisseurs should consider for themselves the claims of the following to a little more attention than they have had hitherto. The Weeping Almond, *Amygdalis communis pendula*, which flowers quite as freely as the common kind. The Weeping Birch, *Betula alba pendula*, a bewitchingly beautiful tree; in fact, all birches are beautiful; and instead of giving them a paragraph, it would be much better some day to give them a chapter. The Weeping Thorn, *Crataegus oxyacanthus pendula*, is a great beauty, weeping quite to the ground, and forming when in flower a bell-tent of snow-white gauzy flowers, fragrant as the breath of May. The Weeping Walnut, *Juglans regia pendula*, a fine tree for a paddock, or any such place; it is not wondrously beautiful, yet when old makes a fine object. The Weeping Mountain Ash, *Pyrus aucuparia pendula*, a scarce and beautiful tree, and a good companion, if needful, to the weeping thorn. The Weeping Turkey Oak, *Quercus cerris pendula*, a park tree of the highest importance, both for its distinctive character, and its graceful proportions. There are many more, but their claims to notice in this eclectic gathering are more or less doubtful. S. H.

## THE AMATEUR'S ORCHID HOUSE.

BY WILLIAM GEDNEY,

Head Gardener to J. C. Day, Esq., Tottenham, N.



THE amateur who is desirous of keeping his garden expenditure as low as possible without curtailing the enjoyment to be derived from it, should cultivate those orchids only which may be successfully grown in a cool or intermediate house, and of these there is a sufficiency to have a fair display of flowers throughout the year, provided the kinds grown have been carefully selected.

The species introduced from the East Indian jungles and the South Sea Islands, such as the Vandas, the Phalaenopsis, and the Saccolabiums, are of the most exquisite beauty, but as a high temperature must be maintained throughout the year, the expense of fuel is heavy, and when the collection is of moderate extent only, the comparative cost is excessive. Moreover, the amateur can find a sufficient number of species to tax his cultural skill, and yield him a rich harvest of pleasure amongst the Odontogloss, the Oncids, the Masdevallias, and other important genera. Believing it to be to the interest of the amateur to limit his collection of orchids to the cool and temperate kinds, I shall on this occasion confine my remarks exclusively to them.

HOUSE.—In speaking of the most suitable house for orchids, I would say distinctly that orchids are not so particular as to their quarters, as some writers would have us suppose. Double glazing, slate stages, open tanks, are, to a certain extent, very well in their way, but they are not really necessary, as the finest specimens may be produced in structures with fittings as plain and inexpensive as those of the most humble greenhouse. They may be built with a span-roof, in an open situation, or with a lean-to roof against a south, west, or east wall. A span-roof house is perhaps the most convenient, and in gardens where there is no available wall space for erecting a lean-to against, the span-roof form is the most economical to build. A very useful house for the amateur, is one about twelve feet in width outside measurement, five feet high at the sides, and ten feet high at the apex. The measurements should be the same for span roofs and lean-to's, and the path, which ought to be three feet in width, should be down the middle, and a house forty feet long, and of the width and height mentioned, and divided in the middle with a glass partition, will afford accommodation for a nice collection of cool and temperate kinds.

Flat stages on each side of the pathway will be the most useful, as the plants at the back can, if needful, be placed on inverted flower-pots, to bring them nearer the glass, and also to enable them to be seen more readily by visitors and those who have the charge of them. The stages can be made of open lattice work, or of boards put close together; and if the extra expense is a matter of small consequence, slabs of stone or slate may be employed instead of



wood, because of the greater durability. The close stage should have a layer of shingle or gravel, from which all the sand and the stones larger than a hazel-nut have been removed, and this layer may be from one to two inches in thickness, and to keep it in its place tack a strip of wood along the edge of the stage. The pathway may be formed with tiles or stones, as may be most readily procurable. The space under the stages should be surfaced with *Selaginella denticulata*, and a line of free-growing ferns planted along the side of the pathway. The ferns have a pleasing appearance, and the moisture rising from the shingle is most conducive to the health of the orchids on the stages above.

To maintain a suitable temperature throughout the year three rows of four-inch pipes should be fixed on each side of the division intended for the temperate species, and two rows on each side of that for the cool kinds, the boiler to be fixed nearest the division in which the highest temperature is to be maintained, and valves fixed so that the heat can be shut off from the coolest division when required.

**SOIL AND REPOTTING.**—The materials required for potting orchids are peat, consisting chiefly of fibrous matter, sphagnum moss, charcoal, and crocks. Suitable peat and the sphagnum can be purchased at the principal nurseries. The charcoal is required for mixing with the peat and sphagnum, and should be broken up into pieces of the size of a cob-nut. All the species do not require the addition of charcoal, but there is no risk of its being otherwise than beneficial to them. The crocks are wanted for drainage, and also for mixing with the peat and sphagnum. When required for the latter purpose, break them into pieces of the same size as the charcoal, but those for the drainage must be proportionate to the size of the pots, which, as a rule, should be filled to nearly two-thirds of their depth with crocks, and when the pots are of a large size the crocks also must be larger. Both pots and crocks must be used in a thoroughly clean state. The most suitable time for repotting orchids is just as they are commencing to make new growth, and as they differ in their season of starting, they must be potted whenever in a proper condition, without reference to the season, with the exception that they should not be disturbed during January and the two following months. In transferring them from one pot to the other, injure the roots as little as possible, and remove as much of the old material as can be taken away readily, and keep the base of the plants just above the level of the rim of the pot.

**GENERAL MANAGEMENT.**—The temperature of the cool house should range from 55° to 65° from the middle of March to the middle of September, and from 45° to 55° during the remaining months; and of the temperate house, from 65° to 75° from March to September, and 55° to 65° in the other months. The night temperatures throughout the year to be about five degrees lower than those during the day. Rather liberal supplies of water to the roots will be necessary for the health of the plants when they are in free growth, and the atmosphere must be well charged with humidity, and this may be done by pouring water upon the floor

and stages at intervals. At other times the atmosphere must be kept rather dry, and care taken to avoid over-watering. When perfectly at rest, the Cattleyas, and others with large fleshy pseudobulbs, require very little water indeed. The plants ought not to be syringed overhead at any time.

**FORMING A COLLECTION.**—A few of the best for a small collection formed for the purpose of having a fair display of bloom throughout the year, are as follows:—

**INTERMEDIATE HOUSE.**—*Ada aurantiaca*, *Aerides roseum*, *Calanthe masuca*, *C. Veitchi*, *C. vestita*, *Cattleya amethystina*, *C. labiata*, *C. marginata*, *C. mossiæ*, *C. triana*, *C. Skinneri*, *Cœlogyne cristata*, *Colax jugosa*, *Cymbidium mastersi*, *Cypripedium barbatum*, *C. villosum*, *C. niveum*, *Dendrobium aggregatum*, *D. albo-sanguineum*, *D. densiflorum*, *D. fimbriatum oculatum*, *D. infundibulum*, *D. nobile*, *Epidendrum vitellinum*, *Goodyera discolor*, *Lælia acuminata*, *L. albida*, *L. anceps*, *L. purpurata*, *Limatodes rosea*, *Miltonia spectabilis*, *Odontoglossum phalænopsis*, *O. Roezli*, *O. vexillarium* (the last two are new and expensive), *Oncidium bifolium*, *O. crispum*, *O. flexuosum*, *O. leucochilum*, *O. sphacelatum*, *Phaius grandifolius*, *Sobralia macrantha*, *Stanhopea insignis*, and *Zygopetalum Mackayi*.

**COOL HOUSE.**—*Barkeria elegans*, *B. Skinneri*, *Cattleya Aclandiae*, *C. citrina*, *Cypripedium insigne*, *C. insigne maulei*, *C. venustum*, *Dendrobium speciosum*, *Epidendrum macrochilum*, *Lycaste aromatica*, *L. Skinneri*, *Masdevallia coriacea*, *M. Harryana*, *M. ignea*, *M. Lindeni*, *M. Veitchiana*, *O. Alexandræ*, *O. Cervantesi roseum*, *O. citrosimum roseum*, *O. gloriosum*, *O. grande*, *O. maculatum*, *O. nebulosum*, *O. Pescatorei*, *O. pulchellum*, *O. triumphans*, *Oncidium crispum*, *Pleione humilis*, *P. lagenaria*, *P. Reichenbachiana*, *Sophronites coccinea*, *S. grandiflora*, *Stanhopea oculata*, *S. tigrina*, *Trichopilia suavis*.

## CULTIVATION OF GLADIOLI.

BY MESSRS. KELWAY AND SON,

The Royal Nurseries, Langport, Somerset.



**O**UR success as cultivators and raisers of Gladioli brings us many letters of inquiry from amateurs, and from these we gather that reliable information on their cultivation will prove acceptable to many readers of the FLORAL WORLD. We have no doubt you will readily grant us space to briefly describe the system of culture by which we have produced the magnificent spikes that have brought us so much honour at the leading exhibitions. It is not desirable we should allude to the success with which our efforts in the cultivation of these flowers have been attended, beyond saying that our collection comprises all the best kinds, and that we devote many acres of our nurseries to their cultivation. In addition to the collection of nearly 3000 named sorts, we grow hundreds of thousands of seedlings annually, and from these are selected some twelve of the best



for distribution under name, and the others are sold in mixture, for garden decoration. We mention this merely to show the extent of our culture, and that we are thoroughly conversant with the best means for insuring success.

There is not, perhaps, a more beautiful class of autumn flowers than these, for by planting at intervals from the second week in March, a grand display of bloom may be had from the early part of August until quite late in the autumn. As exhibition flowers, they put all other autumnal subjects into the shade. In the garden they make a most brilliant and effective display; and for indoor decorations they possess a value as yet not fully appreciated. The flowers on each spike expand in succession, commencing at the lower part; and if the spikes are cut when a few of the lower flowers are developed, and the lower end placed in water, all the flowers will expand, so that one set of spikes will remain in good condition for a very long time.

The system we have perfected for the cultivation of gladioli on a very large scale, is equally applicable to the management of a hundred, or even a few dozen bulbs; for the main principles are the same in both cases. If exhibition spikes are required, select an open situation, apply a good dressing of manure, and dig it over deeply. This ought to be done at once; and in the second or third week in March, according to the condition of the soil, lay out the quarter in beds four feet in width, with eighteen-inch alleys between. These beds will afford room for three rows of bulbs, one down the centre, and the other two, eighteen inches to the right and left. The bulbs to be planted twelve inches apart in the rows, and to a depth of three inches. The first lot of bulbs should be planted near the third week in March, and successive plantings made at intervals of a fortnight until June, should the stock be sufficient. By this arrangement, there will not be much trouble in cutting a stand of spikes on any particular date. If the number of bulbs is small, only one or two plantings can be made; but as the season of flowering is materially influenced by the weather, the cultivator who plants the whole stock at one or two operations, will not stand so good a chance as others who plant in succession. Last year the cold weather in the early part of the summer delayed the season of blooming so much, that we had some difficulty in cutting first-class spikes until a fortnight after the usual time. When the plants are high enough to require support, put a rather stout stake to each. These must not be high enough for the tops to reach above the lowest flower; and one tie of strong bast will suffice to hold them securely. After they are staked, cover the beds to a depth of four inches with partly decayed manure, which serves the double purpose of keeping the soil cool and moist, and stimulating the growth by means of the fertilizing matters washed down to the roots. During periods of dry weather, a thorough soaking of water occasionally will be of immense assistance.

If required simply for the embellishment of the flower-garden, select suitable positions in the borders, dig in a little manure, and plant from three to six bulbs in each. They will require staking in

much the same manner as those intended for exhibition, to prevent the wind injuring them.

Associated with cannas, dahlias, phloxes, roses, and hollyhocks, they produce a magnificent display during the greater part of August and September. The end of March and the middle of April, are the best times for planting for garden decoration.

Those planted in the borders in the pleasure-grounds, ought not to be cut from for indoor decorations, as it cannot be done without causing blanks in the border, which, it need hardly be said, are most undesirable. When a supply of spikes for cutting is required, it is a very excellent plan to lay out a bed, of a convenient size, in the kitchen garden, and plant it with the cheap kinds; the bulbs to be nine inches apart in rows twelve inches from each other. This will afford them ample room, as large spikes are not required.

## SEEDLING PETUNIAS.

BY JOHN WALSH.



It is perhaps not known to many readers of the *FLORAL WORLD* that seedling petunias are so good in quality when the seed has been saved from a fine strain of flowers, that the propagation of a stock by means of cuttings is quite unnecessary, unless a certain number of any particular colour is required. The importance of this fact cannot be fully appreciated excepting by those who have but scanty accommodation for wintering bedding-plants; for instead of having to occupy during November and the three following months, space in the greenhouse or pits with cuttings struck in the autumn, the room can be devoted to other subjects; and a pinch of petunia seed sown in February, will yield a stock sufficient for bedding and pot-culture. Another advantage in raising seedlings consists in the greater variety of the colours obtained, and the more vigorous habit of the plants. They will all differ more or less in colour, and, planted indiscriminately, form most attractive beds.

To procure seed saved from a good strain, or from named flowers, is of the first importance; and it is well readers should be familiar with the fact that there is plenty of bad, as well as good seed, in the trade; and moreover, that seed offered at a few pence per packet will produce seedlings bearing flowers indifferent alike in quality and colour. The best mixed seed, costing from one shilling to eighteen-pence per packet, should be procured, and then flowers of the finest quality may be confidently anticipated.

To afford a sufficiently long period for the production of bushy plants by the time they will be required for filling the flower-beds, the seed must be sown some time in February. Prepare the seed-pans by placing a layer of crocks in the bottom, and then filling them with a light sandy mixture. Make the surface perfectly level, sprinkle with water, and sow the seed, which should be lightly

covered with the same soil as employed in filling the pans. The seed-pans may be placed in any convenient structure, provided the temperature is sufficient to insure the speedy germination of the seed, a heat of 60° being ample for that purpose. The seed-pans may be placed in a warm corner of the greenhouse; but the seed will be longer in germinating, and several weeks' growth will, in consequence, be lost.

Immediately the seedlings are about three-quarters of an inch in height, remove them from the seed-pans, and prick off into shallow boxes at a distance of about one and a-half inch apart. With a little extra attention in the way of keeping them rather close, screening from brilliant sunshine, and sprinkling overhead occasionally, they will soon take possession of the new soil, and be ready for potting-off separately. Let this be done immediately the leaves begin to touch; for if they are left in the boxes until over-crowded, they soon become drawn and weak. Large sixties are the best pots in which to put them, for the small sixties do not hold sufficient soil to maintain a free, healthy growth until they are planted out. If it is more convenient, a bed of soil may be made up in a frame, and the plants put out in it at a distance of four inches apart each way. This will save the trouble of potting; and if a dull, showery day is taken advantage of for planting the beds, they will not receive a check worthy of being taken into consideration.

After the potting-off they will not require the assistance of any more artificial heat than is necessary for keeping out the frost, and if there is a sufficiency of covering materials at hand, fire-heat may be dispensed with altogether. It is important to bring them along steadily in a cool temperature from the first, as the growth is then much firmer, and they can be planted earlier, and will make better progress than in the case of those grown in a temperature in excess of their requirements. The shoots must be stopped as soon as they are established in the small pots, and again at the third or fourth leaf, to promote the plentiful production of side-shoots. The remarks in reference to stopping apply with equal force to plants raised from cuttings, for when furnished with four or five shoots each, and a few inches in length, they commence immediately they are planted to extend on all sides, and quickly cover the beds. But when the petunias are not stopped, they attain a considerable height, and commence to bloom whilst in the pots, and after being planted they have practically to make themselves.

If specimens are required for the decoration of the conservatory, the desired number of plants should be selected previous to any portion of the stock being bedded out. These should be shifted into six-inch pots, and as soon as they have filled these with roots repot, and use eight or nine-inch pots at discretion. The shoots should be stopped twice or three times after they are put into the six-inch pots for to make nice bushy specimens they must have from twelve to fifteen shoots each. Very little training will be required until after the last shift, and then a few neat stakes, about twelve inches in length, will suffice for supporting the shoots. The growth should be allowed to extend six inches or so above the tops of the stakes,

and the result will be a solid mass of bloom without a single stake being visible. For those grown in pots good turfy loam two parts, and manure one part, forms a most suitable compost.

When in pots they require a rather rich compost, but in beds they grow with great vigour, and produce a magnificent display of bloom, in the poorest of soil; so well do they thrive in poor soils, that to apply manure would be little better than wasting it. Their thriving in starving soils is, in my opinion, a strong point in their favour, so far as the great body of amateur cultivators are concerned, for any saving that can be effected in the manure bill is certainly a real gain.

## SEEDLING BRIERS FOR ROSE STOCKS.

BY AN AMATEUR ROSARIAN.



WITHIN the last three or four years, much has been written in reference to the value of the cultivated brier as a stock for roses, and one of the strongest advocates of this stock has afforded ocular demonstration of its capabilities by presenting at the public exhibitions stands of roses that have held their own against all comers. The use of this stock was for a long time regarded as a quite new idea; but there is nothing new about it, for it has been employed in France from time immemorial; and we have in England a grower who avers that he has grown roses on it for something like sixty years. The chief advantage claimed for the stock over the briars obtained from the hedgerows, is the greater abundance of fibrous roots, which enables the trees to be transplanted without any of the risks with which the removal of those on the ordinary stocks are attended. It is also claimed for the stock, that as the fibrils are more abundant, the support afforded the tree is greater, and that there is practically no risk of the trees perishing. Roses certainly make magnificent growth, and there can be no question as to its being especially suitable for dwarfs.

There has been some little discussion in rose circles in reference to the value of this stock, and in consequence inquiries are being made on all sides as to the best means of raising a supply for budding. The first step is to gather the "hips" from the hedge-briars in the course of the autumn and the winter, and to put them in large flower-pots or boxes, with layers of sand between. Early in March they must be removed from the sand, and crushed in some way to separate the seeds from the pulpy matter with which they are enclosed. When this has been done, sow in drills about a foot apart. Briars, it is proper to remark, do not, when raised from seed, send up tall, straight stems like those that spring from an old stool in the hedgerow, for these suckers are not produced until they have acquired age and strength. They, on the contrary, branch out in all directions, and form dwarf bushes, and a special course of management is required to make stocks of them. If they are required simply for dwarf roses, they must, at the end of the first

season, be transplanted into nursery lines, the same distance apart as the drills, and they should be from two to three inches apart in the lines. The following winter, cut them back, and in the course of the succeeding summer they will produce strong shoots, which at the proper moment may be budded in the usual way. To produce stocks for standards a period of seven years is required, and they should be left in the seed-bed two years, and be then transplanted, fifteen inches apart one way, and six inches the other. After they have been standing in the nursery bed two years, cut them back close to the ground, and in the July following select the strongest and straightest of the shoots, and remove all the others, to throw the whole vigour of the plant into it. They must stand two years in the nursery-bed after they have been pruned hard back, and then be taken up and replanted in the rose garden or reserve ground, as may be most convenient. In the summer following they can be budded in the usual manner. It is proper to add, that standard roses on the seedling brier make much finer heads, and are longer-lived, than similar sorts on the hedge-brier, for the latter seldom has a sufficiency of fibrous roots to promote a thoroughly vigorous growth. Seedling briars are not so suitable for spring grafting as the Manetti stocks.

## THE HARDY VERBENA.

BY WILLIAM COLE,

The Grove Vineyard, Feltham.



THE hardy verbena, known generally as *Verbena venosa*, was, during the time I had charge of the extensive gardens at Ealing Park, found so exceedingly useful for bedding, that I am well sure it may be most advantageously cultivated by amateurs who require large stocks of bedders. It has a very vigorous growth, much more so than any of the garden varieties, blooms with great freedom, and is in rather dry soils perfectly hardy. Its hardiness is perhaps the least of its good qualities, yet it is one that must not be overlooked, for it enables the cultivator to raise and maintain a good stock without fire-heat, to the advantage of the hosts of other things that cannot be kept through the winter without its aid. The flowers are of the most effective shade of rosy purple, and they are produced so freely that the beds are solid with bloom from quite early in the summer until late in the autumn. In growth it is rather tall and wiry, and the best effect is produced by planting it in beds alternately with variegated geraniums, *Centaurea ragusina*, or other of the silvery-leaved plants. The wiry shoots run freely amongst these, and as the flowers rise a few inches above the general mass of leafage, the effect is of the most pleasing character. Intermixing them with the variegated geraniums is perhaps the best, as the combination of the rose-coloured flowers of the verbenas and the scarlet of the geraniums just above the even surface of the leafage

of the latter, is at once striking and beautiful. Planted alone it is also very effective.

It may be raised from seed with the same facility as the commonest of the half-hardy annuals, and a packet of seed sufficient at least to produce enough plants for a large bed, may be had at any of the seed houses for threepence or fourpence. It is simply necessary to sow the seed in pans or pots early in March, to place them in the propagating pit along with other seeds and cuttings, and in due course to pot off the seedlings in the same manner as the general stock of bedders. They should also be planted in precisely the same manner, and at a similar distance apart.

*Verbena venosa* differs from the other verbenas in general cultivation, in having thick fleshy roots, not unlike those of the mint. In the early part of the winter, when left out-of-doors, they die down to the ground level, and in the spring following they break freely, and the young shoots make their appearance quite thickly all over the beds. The proper course is to lift the plants from the beds in the autumn, lay the roots in boxes, and cover them with soil; they may then be put in a cold frame or shed, until the early part of the spring, when the roots can be removed from the boxes and put into pots. This course is recommended for convenience of planting, and if five-inch pots are employed, and a few roots put into earth, and then covered with soil, and in a cold frame, strong tufts will be available for planting immediately the beds are cleared of the spring flowers.

## VERBENAS IN THE FLOWER GARDEN.

BY GEORGE SMITH.



THOUGH Verbenas do not enjoy a very large share of popularity as bedding plants, there can be no gainsaying the fact that a more beautiful class of plants do not exist; or one, after the geraniums, better adapted to the requirements of the amateur. They have a neat dwarf habit, they bloom freely, produce an even surface of flowers, and there is certainly a sufficient variety of colour amongst them to satisfy those who do not like to be tied to one or two colours. We have amongst them flowers of the purest white, deepest purple and crimson, and the most brilliant scarlet, in addition to an endless number of shades of rose and pink. With an excellent habit, attractive appearance, and a wealth of colour quite unequalled, it may well be asked why they have declined in popularity, and an inquiry instituted into the cause of their not being cultivated so extensively as in past years. Those who have not paid very close attention to the matter would doubtless experience some difficulty in giving a satisfactory explanation of this seeming anomaly. But the observant cultivator who has studied their habits and peculiarities for any length of time will experience no such difficulty, and in a few words I shall be able to show why failures occur, and by so doing indicate the means by which they may be prevented.

Verbenas, it should be understood, are by no means tender in constitution, as is proved by the fact that they are capable of resisting the effects of many degrees of frost, and that in warm, sheltered situations they will sometimes survive the winter without protection. Notwithstanding this, they are in the early part of the year invariably subjected to a tropical temperature, and the enervating influences of a close and moist atmosphere. Cuttings only equal to about one-third of the number of plants are struck in the autumn, and the remainder are struck in the spring. In the spring propagation of these flowers the usual course is to put the stock plants into a temperature of 65 degrees to start them in growth, and as soon as they begin to grow freely, to remove the tops, and insert them thickly in cutting pots, and plunge in a hotbed the temperature of which is 80 degrees. Here they remain until rooted, a period of two or three weeks, and are then put into single pots, and again kept close and warm for a week or ten days, to become established. If the stock is at all short, the cuttings remain in the high temperature much longer, for the tops are taken off again and again, and converted into cuttings. In the result, the whole stocks become so weakened by the coddling process, that the stems are about the size of a darning needle, and the leaves so thin in texture that a breath of air or a ray of sunshine is sufficient to shrivel them up. By careful nursing, they can, to a certain extent, be brought partly round again; but, from long experience, I am certain they do not acquire the vigour common to plants that have not been subjected to so high a temperature.

Keeping them in the pots until the end of May is another frequent cause of failure, for when kept in the pots too long, they become stunted in growth, and a prey to greenfly and thrips, and when infested with these pests they cannot start away freely from the first, and if the weather should be hot and dry when planted, a portion will dwindle away, and ultimately perish.

My practice during a long series of years has been to propagate early in September a sufficient stock for bedding the following season. When struck they are fully exposed until the autumn frosts render protection needful. They are then removed to a pit, from which the frost can be excluded, but no more artificial heat is employed than is really required for keeping them safe from frost and damp. In February they are potted off separately, and a rich compost of loam, leaf-mould, and manure is employed. A frame where they can be near the glass and be protected from the frost is selected for their quarters, and every opportunity is taken advantage of for ventilating the frame, and as soon as they have acquired a sufficient degree of hardiness, the lights are during the day drawn off altogether. In a very short time they become thoroughly hardy, and in the second or third week in April are planted in the beds, for if they are properly hardened, the frosts after the middle of April will do them no material injury. They soon become established in the beds, and the dry weather we often have in May and June has no effect whatever upon them. As a rule, by the first week in June, the beds are covered with healthy leafage and a moderate quantity of



bloom. The beds are also liberally enriched with manure or vegetable refuse in the course of the winter.

By this system all the worry, labour, and expense attendant on the propagation of verbenas in spring are avoided, and an earlier and better display of bloom is secured.

## REPORT ON ONIONS GROWN AT CHISWICK

BY THE FRUIT AND VEGETABLE COMMITTEE OF THE ROYAL HORTICULTURAL SOCIETY.

Abridged from the Official Report by A. F. BARRON, Gardener-in-Chief.



THE seed was sown on March 16 in well-pulverized moderately rich soil, which had the previous season been well manured for celery. The season was, on the whole, favourable for the growth of onions, so that the trial was so far of a very satisfactory character. Altogether 155 samples were sown, representing ninety-eight different names, of which number twenty are here described as quite distinct. The report only extends to those varieties which have been proved to be well adapted for spring sowing and early autumn or winter use, the remainder of the Tripoli and Silver-skinned sections being again submitted for trial as autumn-sown onions.

1. **WHITE SPANISH** [*synonyms*, Banbury (Perry), Banbury Improved, Nuneham Park, Improved Nuneham Park, Reading, Improved Reading, Naseby Mammoth (Carter & Co.), Oxonian Prize (Nutting & Son), Cutbush's A 1 (Cutbush & Sons), Portugal Cantello's Prize (Waite, Burnell, & Co.)]—Most generally cultivated. Of free growth, ripens off early and well; bulbs large, measuring about 12 inches in circumference, and from 2 to 2½ inches in thickness; flattened, the base broad, flat, frequently a little hollowed and uneven, somewhat globular towards the stalk in the best forms. Skin pale straw, flesh firm and solid, almost white, and of excellent quality. Keeps in good condition to March. The Banbury and Nuneham Park types were the most approved.

2. **LARGE STRAW-COLOURED** (Vilmorin) [*syn.*, Yellow Flat (Hovey & Co.)]—Only distinguishable from the White Spanish by the darker colouring of the outer skins.

*Yellow Lescure* (Vilmorin), *Yellow Cambraia* (Vilmorin).—Considered very spurious stocks of the Large Straw-coloured.

3. **WHITE GLOBE**.—Of free growth, forming a small neck; ripens off early and well; bulbs from 9 to 10 inches in circumference, and 2¾ inches in depth; globular or obovate, with a finely rounded high crown. Skin pale straw, an excellent keeping sort, and much esteemed.

*White Intermediate*, *Oscar* (Cutbush and Sons).—Mixed and in-different stocks of White Globe and White Spanish.

4. **TREBONS** (Vilmorin et Cie., Stuart & Mein).—Free but tender, succeeding best in a warm season. Neck somewhat gross; bulbs of



very large size—about 13 inches in circumference, and from 3 to 3½ inches in depth. Obovate, the base somewhat broad and flat; skin pale straw; flesh pale and rather soft and flabby, but of mild and excellent quality; a very large and handsome onion for early autumn use. It does not keep well, and generally begins to shoot before Christmas. It bears a close resemblance to the Imported Spanish Onions.

5. **YELLOW DANVERS** (Hovey & Co., Vilmorin et Cie, Carter & Co.)—[*syn.*, Danvers Yellow].—A fine distinct onion; of free growth, with a slender neck, so that it ripens off well; bulbs of even and regular size, from 10 to 11 inches in circumference, and about 2½ inches in depth. Roundish globular, skin dark straw; flesh is firm and solid throughout, and of fine quality. A splendid keeping variety.

*New German* (Veitch & Sons).—This bears a close resemblance to Danvers Yellow, but scarcely appears to keep so well.

6. **BROWN GLOBE** [*syn.*, James's Keeping].—Of the same character as the White Globe, but having a dark or reddish brown skin. An excellent keeping variety, and much esteemed. The James's Keeping of some is more flattened near the crown, forming a sort of shoulder to the stalk, and of others again it is similar to the Pear-shaped.

*Magnum Bonum* (A. Parsons) is a very fine selection of the Brown Globe.

*Brown Intermediate. Bedfordshire Champion*.—These are mixed stocks of Brown and White Globe.

7. **PEAR-SHAPED** [*syn.*, Pyriform].—Allied to the Globe section. Of free growth, producing thick necks with very little bulb. The flesh firm and solid, not a good keeping sort, and its shape does not recommend it.

8. **DEPTFORD** [*syns.*, Brown Spanish, Improved Brown Spanish, Strasburgh, Strasburgh Dutch, Pale Red Niente, Light Red Strasburgh].—Of free growth and very hardy, forming a small neck and ripening early; bulbs of medium size, flattened or oblate, of even and regular form; skin dark reddish brown. The flesh firm, solid, tinged with red. An excellent keeping variety.

9. **FRENCH STRASBURGH** [*syn.*, Pale Red St. Brieux].—Distinct from the Deptford or English Strasburgh. Bulbs smaller, of uneven shape, and frequently split open into several crowns; very inferior.

10. **DEEP BLOOD RED**.—Of free hardy growth. Bulbs of medium or rather small size, flattened or oblate, and generally of very even and regular form. Outer skin dull red; inner coating deep glossy red. The flesh pure white. Very firm and solid. Strong flavoured, and a late keeper. A valued variety.

*Blood Red*.—Simply a paler-skinned variety of the preceding, and the most common.

11. **WETHERSFIELD RED** (Hovey & Co., Carter & Co., Benary & Son)—[*syn.*, Bright Red Mezieres (Vilmorin)].—Of free robust growth. Neck small, ripens off freely. Bulbs large, flattened or oblate, very even and regularly formed, about 12 inches in circumference and 2 inches in depth. Outer skin light dull red; inner

coating light purplish. The flesh pure white, the outer surface of the coating only being coloured. Very firm, solid, and of mild and excellent quality, and keeps well. A fine, handsome onion from America. The finest type of Red Onion.

12. **EARLY RED** (Hovey & Co.).—Rather early red variety. Bulbs of medium size, flat, of a very dull red colour. Flesh firm and solid, and of good quality.

13. **TWO-BLADED**.—The true two-leaved type has small roundish bulbs about an inch in diameter. Skin dull yellowish-brown; the flesh greenish white and frequently a little coloured. Very firm and solid, and keeps well. The small size makes it useful for pickling purposes.

14. **TENERIFFE** (Benary & Son).—This greatly resembled in appearance the smaller types of the Two-bladed.

15. **SILVER-SKIN** (Nutting & Son).—[*syns.*, Silver-skin Pickling (Veitch), Early White Silver-skinned (Benary & Son), White Round Early Hard Dutch (Vilmorin et Cie.)].—Bulbs are of medium size, roundish oblate. Outer skin pure white or silvery. The flesh pure white, firm and solid. Keeps well, and useful to those who prefer very white onions. Quite distinct from the Paris Silver-skin, which does not keep well.

16. **QUEEN** [*syns.*, New Queen, Piccirillo's New Queen].—A very small and very early variety of the Silver-skinned section. It forms bulbs almost as quickly as a radish, and has rarely more than two or three leaves. Fully grown last season by the first of June, about fifteen days earlier than the White Italian Tripoli. It exactly resembles the Nocera as introduced from Italy about thirty years ago, and the Florence White of earlier date.

17. **POTATO ONION** [*syn.*, Underground Onion].—This is not propagated by seeds. The small bulbs are planted in the ground like Shallots, and around these a number of new bulbs are produced. Bulbs are of average size. Skin reddish brown. Flesh tolerably firm, solid, and of fair quality. Does not keep well, but useful for an early supply.

18. **EGYPTIAN** [*syns.*, Egyptian Bulbiferous, Tree Onion, Garden Rocambole]. This variety throws up a stem on which, instead of flowers, small bulbs are produced of the size of small marbles, which are very excellent for pickling. It is propagated by planting these bulbules (the largest of which will bear bulbs the same season), or by the bulbs formed in the ground, and that have not formed stems.

19. **AMERICAN PERENNIAL TREE, OR TOP ONION** (Carter & Co.).—Small and inferior. No bulbs are formed in the ground. The plant is perennial; the roots are long and fibrous.

20. **WELSH**.—Of this there are two varieties, the Red and the Green. The plant is an herbaceous perennial, and forms no bulbs; the roots are long and fibrous. The green tops or leaves only are used. It may be propagated by seed or by division of the roots.

## REPOTTING BRITISH FERNS.

BY W. BRADBURY.



BRITISH FERNS that have attained to specimen size should be repotted annually, and the best time in the whole year for doing this is just before they commence to make new growth; or, to be more precise, from the middle of February to the middle of the month following. So long as the ferns are of small or medium size, no difficulty will arise in reference to repotting them; but as soon as they reach a large size, cultivators who have not had overmuch experience with them will be perplexed as to the best course to take. The ferns will already occupy pots as large as appear desirable for convenience of moving about, and the cultivator will not know how to afford them the assistance of a supply of fresh soil without increasing the size of the pots. There is a very easy way out of the difficulty, for ferns will, when at rest, bear a good deal of pulling about at the roots without injury. A portion of the roots may indeed be removed altogether without their suffering in the slightest degree.

Unless exceptionally large specimens are required, pots from eight to ten inches are quite large enough, for when they exceed the largest of the two sizes, they are cumbersome in appearance, and heavy to lift about. In shifting plants, that occupy pots of the maximum size, remove about two inches of the soil from round the ball with a bluntly-pointed stick, and when this has been done, trim the roots away with a sharp knife. When this has been done, and the crocks and a few inches of soil removed from the lower part of the ball, they can be again put in pots of the same size, with as much new soil about the roots as would be the case were they shifted without the balls being reduced, into pots two sizes larger. Deciduous and evergreen kinds may alike be deprived of a portion of the roots in the manner pointed out; and in shifting small examples into larger pots, it is an excellent practice to loosen the roots, and reduce the ball a little all round.

A few of the species are somewhat peculiar in their requirements as to soil, but for those included in all the leading genera, such as the *Athyriums*, *Lastræas*, and *Polystichums*, a mixture consisting of fibrous loam and peat, in equal parts, and one part of sand to every six parts of the peat and loam, combined, will be found in every way suitable. The drainage must be perfect, but the quantity of crocks in each need not be large, for if they are broken up into pieces of the size of a cob-nut, and a layer about an inch in thickness put in each pot, and covered with some loose material, there will be no risk of the soil becoming water-logged through the drainage not acting satisfactorily. The soil must be pressed equally firm all round, for if the new soil is filled in loosely, the water will soak away without moistening any part of the old ball. A cold frame, occupying a shady position is the most suitable quarters for the British and other hardy ferns when making new growth, and to this they should be removed after the repotting.

## A NEW WAY OF GROWING ACHIMENES.

BY WILLIAM JOHNSON.



O well known are Achimenes for their attractiveness when well grown in the form of bush specimens, that it is not, perhaps, necessary to touch upon that style of training; but of late I have been experimenting with them, and, amongst other things, have proved conclusively that they possess a very high degree of value as basket plants. They make such a grand display when grown in baskets, and are so much admired by visitors, that I am quite sure the readers of the *FLORAL WORLD*, who follow my advice, and fill a few baskets with them, will not regret having done so. The baskets are not required to be large—indeed, baskets of medium size are the most suitable. To properly fill these a rather large number of roots will be required, and I should not recommend those who have to purchase roots to grow them in baskets until they have increased the stock by pot culture. But those who have a large number of roots at hand, and have no occasion to incur any extra expense in the matter, may devote some part of their attention to the production of basket specimens with the full assurance of engaging in a very pleasurable task.

The baskets should be deep in proportion to their diameter, and it is a matter of no importance whether they are made quite plain or highly ornamental, for by the time the plants will be in bloom—and until that time they should not be placed in the conservatory—the baskets will be completely enveloped with the foliage and flowers. The Achimenes must not be put into the baskets until they have made a growth of two or three inches, for to form large masses, and cover the under side as well as the surface of the basket, a portion of the shoots must be so arranged as to come through the sides of the baskets; and if the roots are planted before starting, the whole of the growth will rise to the surface. My practice has been attended with much success, and I prepare a number of small sixties, by filling them to within about three-quarters of an inch of the rim with light and rich soil, and on the surface of this the roots are laid at the rate of three to each pot. A covering of soil of a similar character is then applied, and they are then removed to a pit or house suitable for starting them. Until they have grown sufficiently to be put into the baskets, they require precisely the same warmth and attention as those intended for pot culture. As these remarks, for the reason given above, are not intended for those who are quite unacquainted with these flowers, it is not needful to enter into the details.

Prepare the baskets by placing over the bottom a good layer of suitable moss, and fill in a few inches of the prepared soil, then take the Achimenes, turn them out of the pots, and lay them round the sides of the basket, at a distance of about four inches apart. They must be so placed that the shoots project through the sides of the basket, and as far as possible the surface of the ball of soil should

be pressed close against the wire, for if it is an inch or so from it, a hollow space will be left, for this hollow cannot be filled without damaging the young and tender growth. The centre of the basket and the space between the balls of soil must be filled in rather firmly, and sufficient soil added to support a second row of plants about four inches above the first. The number of plants required for each basket must be determined by its size, but for those not large two rows will suffice, as some of the shoots of the plants on the surface may be brought down and trained over the wirework. In planting the surface of the basket, place them rather close together round the outside, and fill up the middle by putting them about six inches apart. For small baskets—say those not exceeding twelve inches in diameter—one row of plants will suffice for furnishing the sides, and six or eight for the surface. A layer of moss must be placed next the wirework, to keep the compost in its place, and the latter should consist of peat loam and leaf-mould in equal parts.

As soon as the baskets are filled, they must be suspended in a convenient position in the stove or vinery, and all the attention requisite will be to supply liberally with water. Syringe frequently, and regulate the growth as may be necessary, until they commence to grow freely. The water supply must not be too liberal, or the soil will become sour before the roots run freely into it; but after the soil is well filled with roots, it may be most abundant without the slightest danger of its being otherwise than beneficial. The undergrowth will require to be trained regularly over the sides of the basket by means of strands of bast secured to the wirework, and the portion of the outside row on the top must be brought over the sides and trained downwards. The remainder should be pegged down as soon as six inches or so in height, and then allowed to grow naturally. When coming into bloom, they can be suspended in suitable positions in the conservatory, and, with proper attention, will remain in perfection a very long time. The compact-growing kinds are the most suitable, for the tall, long-jointed sorts, such as *Achimenes longiflora* and its varieties, are not adapted for basket culture, and if selected for that purpose, the results will be unsatisfactory.

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## DRAWING TAUGHT IN FIVE MINUTES.



HOSE who follow our few and simple directions will find it a quite easy matter to draw a reversed copy of an engraving, at the first attempt, and in a few minutes. Having made a good beginning, they are advised to go on, and, instead of copying a picture, to make an original drawing of a natural object. "Practice makes perfect," it is said; but the peculiarity, and, indeed, the originality of the plan we shall now unfold is, that for copying any drawing or print there is no practice at all needed; the beginner will succeed perfectly at the very first attempt. Having succeeded, the beginner will be alone to blame if any easy success does not lead to something higher and of more enduring value.

The materials required are a few common black-lead pencils, a small square of common window glass, a sheet of paper, a smooth table, and a print of any kind.

One of the FLORAL WORLD pictures will answer admirably for practice. Place the picture on the left hand, and the paper to the right, with the glass on edge between them, thus—



By looking at the glass obliquely from the left side, the picture will be seen clearly delineated on the paper to the right, and you have but to follow with a pencil the lines laid down for you, and in a few minutes you may complete the outlines of an elaborate design in the most perfect manner imaginable. To follow out this lesson will be too easy a matter to justify particular advices here. It will cost at most nothing to construct a drawing-board, with a groove for the glass, and a holder to keep the paper from shifting, and it will not cost much in the way of time, attention and perseverance, to render the eye and hand so ready in operation by the aid of our simple apparatus that they will soon be enabled to dispense with such aid, and by their works declare the owner a genuine though self-taught artist.—*Garden Oracle.*

## THE ROYAL AQUARIUM AND SUMMER AND WINTER GARDEN, WESTMINSTER.



THE Royal Aquarium and Summer and Winter Garden at Westminster was opened by the Duke of Edinburgh, on Saturday, January 22, and forms a prominent architectural feature among the structures in the neighbourhood. It has been erected on a site in the Broad Sanctuary, and Tothill Street, Westminster, and is within a very short distance of the St. James's Park Station on the Metropolitan District Railway, and is, therefore, readily accessible from all parts of the metropolis. The building is 600 feet in length from its eastern frontage to its western boundary, and has been built in the most substantial manner with red Fareham bricks, with Portland and Bath stone dressings, freely introduced and elaborately carved. The "front hall" at the eastern end is 140 feet in length, and 85 feet in width, and has ornamental towers at the corners. Through wide openings both on the ground and gallery floors, at the west end of the hall the Promenade or Winter and Summer Garden is reached. This is 400 feet long by 160 feet wide, and is approached from the front hall, and from two bold entrances from Tothill Street. The width of the main avenue, or promenade, is 80 feet, or 8 feet wider than that of the Crystal Palace. The height of the gallery from the floor of the promenade is 16 feet, and from this level to the springing of the vaulted roof is about 16 feet, and the height from the floor to the vaulted roof is 72 feet. The roof over the central portion, or avenue, is semi-circular in form, and consists chiefly of iron and glass. It has been glazed on the principles of Rendle's Patent. This system of glazing, the invention of Mr. W. E. Rendle, is specially adapted for horticultural structures of all kinds, as we have stated in these pages on more than one occasion, and as testified by the popularity it is rapidly acquiring in nurseries and private gardens. By this invention all the woodwork is completely covered by the metal and glass, no putty is used, and in the construction of circular roofs bent glass is entirely dispensed with.

The galleries extend all round the building, and are 40 feet wide, a portion at the east end being set apart for refreshments. The large orchestra is placed in the centre of the north side; and at the west end of the building is a concert room and theatre combined. This is of noble proportions, and capable of seating 2300 persons. The Aquarium is remarkable as being the first of the kind erected in the heart of a great city. There are thirty-one show tanks, nine for fresh water, and twenty-two for sea-water animals. In addition there are twelve reserved tanks in which to place living food, and also any animals that may be in a sickly state.

For supplying the tanks there are nine huge reservoirs of a length, in the aggregate, of 263 feet, and a width of 53 feet. These are 20 feet below the surface, and contain 800,000 gallons of water, one-fourths of which is fresh, and the remainder seawater. The water will never be completely changed, but will be maintained in a clear, pure condition by a system of aëration and circulation invented by Mr. W. A. Lloyd, naturalist to the establishment.

Mr. Wills, the well-known floral decorator of Onslow Crescent, Brompton, has been entrusted with the embellishment of the main building with flowering and fine foliage plants, and under his direction a series of flower and fruit shows on a large scale, will be held during the year, in addition to concerts and theatrical entertainment.

## THE GARDEN GUIDE FOR FEBRUARY.

“Blest be that hand divine, which gently laid  
My heart at rest beneath this humble shade!  
The world's a stately bark, on dangerous seas,  
With pleasure seen, but boarded at our peril;  
Here, on a single plank, thrown safe ashore,  
I hear the tumult of the distant throng,  
As that of seas remote, or dying storms,  
And meditate on scenes more silent still;  
Pursue my theme, and fight the fear of death.  
Here, like a shepherd, gazing from his hut,  
Touching his reed, or leaning on his staff,  
Eager ambition's fiery chase I see;  
I see the circling hunt of noisy men  
Burst law's enclosure, leap the mounds of right,  
Pursuing and pursued, each other's prey;  
As wolves for rapine; as the fox for wiles;  
Till death, that mighty hunter, earths them all.  
Why all this toil for triumphs of an hour?  
What though we wade in wealth, or soar in fame,  
Earth's highest station ends in “here he lies,”  
And “dust to dust” concludes her noblest song.”

YOUNG.

### THE FLOWER GARDEN

The principal matters requiring attention during the month will be to keep the lawn well swept and rolled, to prick over the surface of shrubbery borders where it can be done without injury to the roots of the shrubs, and to roll the gravel-walks frequently. The chief plants that will bloom during the month, should the weather be open, are the white wall-cress, *Arabis albid*a; perennial candytuft, *Iberis semper-florens*; Colchian barrenwort, *Epimedium pinnatum elegans*, *Forsythia viridissima*, a very attractive yellow-flowered shrub; the Laurestinus, *Polygala chamæbuxus* and *Helleborus Olympicus*. There must be no haste to dig borders in which bulbs and herbaceous plants predominate, or, indeed, any borders well furnished with permanent residents. The operation is sure to do more harm than good, and many a fine crown of pæony or rudbeckia, or other good subject, may be chopped to pieces.

### KITCHEN GARDEN.

Early sowings of seeds of summer crops should be made on warm, rather dry soils, the earlier the better. But on cold, damp soils there is really nothing gained by early sowing. Take advantage of fine weather to have all digging and manuring completed; in fact, let out-door work now take precedence of everything else, even to the neglect, if it cannot be helped, of other matters. Crops that are specially valued for earliness, such as saladings, may be greatly helped by means of warm borders under good walls, and protection by means of borders covered with straw or mats.

### FRUIT GARDEN.

Prune out-door vines, and train only ripe, hard wood, the distances between the rods to be eighteen inches. Complete all pruning and nailing of wall-trees not yet done, and lay a good mulch of fat dung on old borders that have not had such refreshing for some time. Trees that bear well must be fed well. Many cultivators are afraid to manure fruit-trees, for fear of inducing a gross habit, but this is sel

February.

dom the result of manuring trees that have acquired age and a fruitful habit. Of course, a gross habit is not to be encouraged; but, on the other hand, if fine fruit is desired, the roots must have food enough to furnish it. Do not be in haste to begin grafting; it is best to see the stocks actually moving before putting grafts on, as in that case they take directly, and the losses are fewer than when they get a little shrivelled before a junction takes place.

#### GREENHOUSE AND CONSERVATORY.

These structures to have as much air as possible, as weather may permit. Where propagating is the order of the day, a brisk heat may now be used. Beginners must be content with an average of 60°, but experienced hands may let the heat go up to 80° with any kind of cuttings, and get them rooted with great speed. A great many hard-wooded plants are growing, and some are in flower; these will require plenty of air, but those just starting may be kept rather close till the first leaves are pretty well expanded. A good average temperature during the month is 50°, rising to 60° or 65° with sunshine, and going down to 45° at night.

#### STOVE.

Many plants will require to be repotted and trained out afresh, and it will be unwise to delay such work beyond the first indications of a start. Plants just out of bloom to be cut back, and allowed to break again before repotting. A good time this to begin with *Stephanotis floribunda*. Average temperature, 55° to 60° night; 65 to 70° day.



#### INGER-POST FOR PURCHASERS OF PLANTS, FLOWERS, BULBS, AND SEEDS.

##### FIFTY GLADIOLI FOR EXHIBITION.

(*Best Twenty-four marked thus \*.*)

Accius, Ada\*, Agathe, Ariane, Armide\*, Astræ\*, Beauty of England\*, Belgica\*, Brennus\*, Campana\*, Cassino\*, Delicatissima, Echantress\*, Elvire, Etendard, Eurydice, Formosa\*, Hesperia\*, Horace Vernet\*, Hogarth, Iphis\*, Lady Bridport\*, Lord Bridport\*, Le Vésuve\*, Madame Dombrain, Madame Desportes\*, Madame Furtado (Souchet), Magnificent\*, Marechal Bazaine\*, Marie Stuart, Moliere (Souchet), Mons. Adolphe Brongniart, Mons. Barillet-Deschamps, Mons. Legouve, Newton, Norma, Oberon\*, Octavia, Orphee, Ossian, Panteus\*, Phideas, Princess Mary of Cambridge, Reine Victoria, Robert Fortune, Rosa Bonheur, Sentius\*, Shakespeare\*, Socius\*, Una, Victory\*, Virginalis, Yellow King.

##### ONE HUNDRED GLADIOLI FOR GARDEN DECORATION.

(*Arranged according to their Colours. Best forty marked thus \*.*)

CRIMSON SCARLET, AND RED SHADES.—Achilles, Alexandre, Argus, Bernard Palissy\*, Brencleyensis\*, Comte de Morny\*, Couranti fulgens, Cuvier, Duc de Malakoff\*, Emperor Napoleon, Everard de St.-Jean, Galilee, Greuze, James Carter\*, James Watt\*, John Waterer\*, La Quintine, Le Poussin, Le Titien, Louis Van Houtte\*, Lord Byron\*, Milton\*, Pluton, President Jules Duprey, Roi Leopold, Sir William Hooker\*, Theodore, Victor Verdier, Virgil, Vulcan.

PURPLE, LILAC, AND DARK SHADES OF ROSE.—Admeta, Bernard de Jussieu, Charles Dickens, De Humboldt\*, E. G. Henderson, Eugene Scribe\*, Fenelon, Lapepe\*, Lady Franklin\*, Le Dante, Leonardo du Vinci, Livingstone\*, Mons. Souchet\*, Marquise de Pompadour\*, Osiris, Peter Lawson, Picciola\*, Princess Alice\*, Rev. J. M. Berkeley\*, Rosea Perfecta, Stuart Low\*, Sultana, Thalia, Thomas Moore\*, Walter Scott.



WHITE, WITH ROSE, LILAC, AND PURPLE STRIPES.—Abrota, Diana, Galathe\*, Isabelle, La Candeur\*, La Fiancee, Madame Adele Souchet\*, Madame Binder\*, Madame Lannau-Roland\*, Maria Dumortier, Mathilde de Landevoisin\*, Reine Hortense, Stella,\* Sylphide, Uranie.

ROSE, SALMON, AND SHADES OF LIGHT RED.—Adonis, Berenice, Couranti salmoneus, Duchesse de Padoue, Fanny Rouget\*, Felicien David\*, Fulton, Gil Blas, Lord Raglan, Madlle. Emma Livry, Marie Verdier, Madame Rendatler\*, Madame Victor Verdier, Moliere, Mons. Blouet\*, Ninon de l'Enclos\*, Olympe, Lescuyer, Princess Clothilde\*, Princess Frederick William, Princess Mathilde\*, Rubens, Sir Joseph Paxton\*.

#### TWELVE CLOVE CARNATIONS.

Albert (Turner), Bride (Hodges), Christine (Turner), Cremorne (Abercrombie), Geant des Batailles, Ghost (Turner), King of Yellows (Abercrombie), Maiden's Blush, Pioneer (Turner), Purple Prince (Turner), True Old Crimson.

#### FORTY-EIGHT SHOW CARNATIONS.

SCARLET BIZARRES.—Admiral Curzon (Easom), Campanini (Turner), Captain Thompson (Puxley), Duke of Edinburgh (Abercrombie), Guardsman (Turner), John Norman (Norman), Mars (Hextall), Mercury (Hextall).

CRIMSON BIZARRES.—Colonel North (Kirtland), Eccentric Jack (Wood), Isaac Wilkinson (Turner), Lord Goderich (Gill), Lamplighter (Wood), Marshal Ney (Headley), Rainbow (Wood), Rifleman (Wood).

PINK AND PURPLE BIZARRES.—Captivation (Taylor), Falconbridge (May), Fanny (Dodwell), James Taylor (Gibbons), Masterpiece (Schofield), Princess Royal (Seeley), Purity (Wood), Shakespeare (Puxley).

PURPLE FLAKES.—Ajax (Hextall), Brunette (Puxley), Dr. Foster (Foster), Earl of Stamford (Elliott), Florence Nightingale (Seeley), Jacques (May), Mayor of Nottingham (Taylor), True Blue (Taylor).

SCARLET FLAKES.—Annihilator (Jackson), Christopher Sly (May), Illuminator (Puxley), John Bayley (Dodwell), Mr. Battersby (Gibbons), Mrs. Holland (Hardman), Superb (Ingram), William Cowper (Wood).

ROSE FLAKES.—Christigala (Whittaker), Mrs. F. Burnaby (Turner), Mr. Hextall (Turner), Phoebe (Headly), Poor Tom (May), Rose of Stapleford (Headly), Sibyl (Holmes).

#### TWENTY-FOUR WINTER-FLOWERING CARNATIONS.

Alice, bright rose; Astoria, yellow, scarlet, and white; Beauty, pure white, pink stripe; Caliban, rose; Delicata, pure white, margined pink; Defiance, large crimson; Empress of Germany, white; Exquisite, flaked rose; King of the Belgians; La Belle, white; Le Grenadier, scarlet; Hope, scarlet, and crimson flake; Jupiter, scarlet; Marchioness of Westminster, rose-pink; Oscar, yellow; Princess Christian, bright pink; Proserpine, scarlet; Queen of the Belgians, white, striped rose; Queen of Whites, white, a true clove; Souvenir de la Malmaison, rosy flesh, very fragrant; Rosy Morn, deep rose; Vandael, yellow self; Royal Scarlet, scarlet; White Swan, pure white.

### HORTICULTURAL AFFAIRS.



THE ROYAL HORTICULTURAL SOCIETY has revised the privileges of its fellows, and in so doing has abolished transferable tickets, which, it appears, were open to misuse. The meetings of the Fruit, Floral, and Scientific Committees were held on the 19th ult., but, as is customary thus early in the year, they possessed no special interest.

THE INTERNATIONAL HORTICULTURAL EXHIBITION to be held at Brussels in April next, under the auspices of the Société Royale de Flore, forms the hundredth exhibition of the society, and therefore, to Belgian horticulturists, it will possess much interest. In the schedule, nearly two hundred and fifty classes have been provided for horticultural productions, comprising flowering and ornamental-leaved plants of all classes, fruits of all kinds, cut flowers, floral decorations, garden lite-

ration, and aquariums. The King of the Belgians offers a gold medal to the foreign exhibitor who shall contribute most to the splendour of the exhibition, and the Queen a similar medal to be competed for by Belgian exhibitors. Her Majesty also offers a gold medal for the best collection of fifteen specimen orchids.

MR. SHIRLEY HIBBERD will, on February 9, deliver a lecture before the Society of Arts, on "The Cultivation of Hardy Fruits with a view to improvement of quality and insuring constant and abundant production."

ALEXANDRA PALACE.—The report presented to the half-yearly meeting states that a profit of £23,024 18s. 4d. has been realized on the workings of the past six months, and it is confidently expected that this will be greatly augmented as the Palace and its attractions become more widely known, and increased railway facilities are provided. No less than 1,307,857 persons have visited the Palace during the past six months. The Company also expects to increase the number of season ticket holders, which already shows a steady advance, by selling the 260 acres of building land adjoining the Palace and Park, thus creating a resident population, many of whom would doubtless avail themselves of the advantages of a season ticket.

POTATOES have proper recognition in the schedules of the exhibitions to be held at the Westminster Aquarium. At the October meeting, prizes of £5, £3, and £2 will be offered for collections of twenty dishes.

THE FODDER VALUE OF APPLES forms the subject of a paper in part four of the *Bulletin of the Bussey Institution*, from the pen of Mr. H. Storer, Professor of Agricultural Chemistry. It is well known that cattle will eat apples with avidity, but it appears from the analysis made by Mr. Storer that apples can only be given to cattle with advantage in conjunction with some highly nitrogenous food.

THE ROYAL BOTANIC SOCIETY has issued the schedules of prizes to be competed for at the spring shows, to be held at Regent's Park on March 29 and April 26. On the last-named date three prizes are offered for "six old-fashioned hardy plants in flower, distinct (in pots)," with the condition that no plant introduced to the gardens of England during the present century is to be considered old-fashioned.

THE HORTICULTURAL CLUB held its annual meeting on the 5th ultimo. The financial position of the club is, it appears, most satisfactory, and steps are being taken for organizing a series of meetings for the discussion of subjects of horticultural interest, and it is intended also to form a reference library.

OLD PELARGONIUMS.—Two old specimens of our veteran friend, Tom Thumb Pelargonium, now nearly forgotten, are thus described by the Comte d'Eprenesnil in a letter to the editor of the *Revue Horticole*. He says: "I have seen two remarkable plants in M. Leclerc's garden at Fecamp. They are two Pelargoniums of the variety Tom Thumb, known, on good authority, to be more than forty years old. They were growing in two vases about 18 inches deep by 15 inches in diameter. The size of the plants was nothing unusual, the stem being only about four inches in girth at eight inches from the ground, but they formed fine dense bushes about five feet high by eight feet in circumference, and were a perfect blaze of colour. Of course they would have been very much larger, if they were not annually subjected to a severe pruning."

A CURIOUS PELARGONIUM SPORT is recorded in the *Revue Horticole*. A gardener, named Crepet, living at l'Orme-du-Pont-en-Puysaie, Yonne, has a double-flowered Zonal Pelargonium with a single stem which exhibits this peculiarity, that the flowers of one-half of the head are of a beautiful rose, while those of the other are of a dark scarlet, the normal colour of the flowers of the variety.

A VALUABLE TREE.—One of the finest specimens of the Pollard Oak ever grown in England was sold the other day in Liverpool. Its trunk was fourteen feet in length and twenty-one feet in circumference, its actual weight, inclusive of the root, being thirteen tons. This tree, which was grown near Chipping Norton, in Oxfordshire, is to be used for furniture. The tree is calculated to produce 70,000 feet of veneers, the value of which is estimated at 500 guineas.

THE GOLDEN CANADIAN POPLAR, judging from the coloured illustration received from Mr. C. Van Geert, of Antwerp, is a valuable addition to the list of hardy trees with coloured leafage. It was, we learn, obtained from a sport of the Canadian Poplar, and from the rapidity of its growth, will prove of more value, for planting where an effect is desired to be produced at once, than the Golden Oak and Golden Catalpa—both fine things, but of rather slow growth.

AN EXHIBITION OF EARLY-FLOWERING CLEMATIS will be held in May next, by Messrs. G. Jackman and Son, of Woking, in the gardens of the Royal Botanic Society. The exhibition will commence on the first Wednesday in May, and remain open for three weeks, if the weather is favourable to the preservation of the flowers for so long a period.

PELARGONIUM WONDERFUL, now in course of distribution by Mr. George Smith, of the Tollington Park Nursery, will probably prove one of the most valuable Zonals that will be introduced to commerce this season. The flowers are brilliant scarlet, fairly double, and produced in medium-sized trusses in the most profuse manner. It was obtained from a sport of *Vesuvius* Pelargonium, and differs only from that famous variety in having double flowers. As the petals are not shed so quickly as in the case of the parent, the double form will probably be found of immense value for growing in quantities for furnishing cut flowers during the winter.

THE AGE OF TREES.—The following table, based on an examination of the annual concentric layers of the oldest known trees, appears in a recent number of the *Illustration Horticole*—Judas tree, 300 years; common Elm, 335; common Ivy, 450; common Maple, 516; White Birch, 576; Orange tree, 630; Evergreen Cypress, 800; common Olive, 800; Walnut, 900; Oriental Plane, 1000; common Lime, 1100; common Fir, 1200; common Oak, 1500; Cedar of Lebanon, 2000; Taxodium distichum, 3000; Yew, 3200.

THE TEA TREE OF COTTAGE GARDENS.—The name "Tea tree," or "Tea plant" (by which the commonly cultivated *Lycium* is generally known in England) originated, according to Loudon, in a curious mistake. It was at first called the Duke of Argyle's Tea-tree, from the circumstance of a tea-plant (*Thea viridis*) having been sent to the Duke of Argyle at the same time as the *Lycium*, and the labels having been accidentally transposed. A somewhat similar occurrence explains the name *Thé de l'Abbé Gallois*, by which a Chinese dwarf variety of the elm is known in France. An abbé of that name, in the reign of Louis XV., imported the plant from China, supposing it to be the real tea tree.

THE AURICULA, says *Nature*, is said to be the only Alpine plant which has come into general cultivation in the gardens of the rest of Europe. In a pamphlet, entitled *Die Geschichte der Aurikel*, Professor Kerner traces the history of the discovery and cultivation of this plant from the time of L'Escluse (Clusius), who first transplanted this species and the hybrid *P. pubescens*, *Jaeg.*, in 1582, from the Tyrolese Alps to Belgium. The latter species, and not the true *P. Auricula*, *L.*, which quickly disappeared from cultivation, is believed by Professor Kerner to be the real ancestor of the cultivated Auriculas of our gardens. The two were known at the time of Clusius under the names of "*Auricula-ursi* I." and "*Auricula-ursi* II.," from the supposed resemblance in the shape of the leaves to that of the ear of a bear. The hybrid *P. pubescens*, which had been lost from the German and Austrian alps for nearly three centuries, was rediscovered by Professor Kerner in 1867, in a single locality in the Tyrol.

AUCUBAS.—The flowering of the female aucuba occurs in April and May, that of the male earlier, which does not prevent fertilization taking place when the plants are placed sufficiently near each other; this, however, does not imply that we could not obtain better results, either by the selection of males which flower later, or by the help of special means to retard the flowering of the males or to hasten that of the females. We speak thus to assure those of our readers who, in consequence of the difference in the periods of flowering, fear they will not obtain seed. When the plants are in the open air, the berries sometimes begin to grow red in December; in a house this may happen somewhat sooner. The difference in the times of flowering causes a corresponding one in that of ripening, which, according to circumstances, may take place from the end of March to the end of May. If sown as soon as gathered, and placed either in a house or under a frame, the germination of the seeds takes place in August or September, so that the seedlings may be separated and potted off in October or November. If the plants when potted off are placed in a house with a slightly raised temperature, there will be no reason to repent of having done so; on the contrary, the young plants will push faster, and in June or July they may be put out, plunging the pots in a half-shady place, or even in the sun, but taking care to water them often with a fine rose, and but little at a time. At the approach of winter they may be placed under a cool frame until spring, when they can again be put in the open air. Treated in this

way, the aucubas will flower about the third year; but long before that time—that is, when they are about two years old—the sexes may begin to be distinguished by the males having a large oval-conical bud on the top; the females, on the contrary, at the same time have a very pointed one, scarcely visible.

A HARDY BEGONIA.—Messrs. Frœbel, of Zurich, have issued a coloured plate of *Begonia Frœbellii*. It is a tuberous species, which will probably prove hardy in the South of England or on the West Coast of Scotland, at any rate with a little protection. It flowers freely, bearing trusses of erect scarlet flowers, and may be considered a valuable acquisition.

THE MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY is burdened with a debt of £6,000, and efforts are now being made to raise a sum of money sufficient for its extinction. The subscriptions promised up to the present date amount to £3,000.

LEAF ORNAMENTS FOR WINDOW SCREENS.—The following may afford amusement and pleasure to those who take a delight in domestic decorations:—An exquisite transparency may be made by arranging pressed ferns, grasses, and autumn leaves in a pane of window glass, laying another pane of the same size over it, and binding the edge with ribbon, leaving the group imprisoned between. Use gum-tragacanth in putting on the binding. It is well to secure a narrow strip of paper under the ribbon. The binding should be gummed all round the edge of the first pane, and dried, before the leaves, ferns, etc., are arranged, then it can be neatly folded over the second pane without difficulty. To form the loop for hanging the transparency, paste a binding of galloon along the edge, leaving a two-inch loop free in the centre, afterwards to be pulled through a little slit in the final binding. These transparencies may be either hung before a window, or, if preferred, secured against a pane in the sash. In halls a beautiful effect is produced by placing them against the side-lights of the hall door. When the side-lights are each of only a single pane, it is well worth while to place a single transparency against each, filling up the entire space, thus affording ample scope for a free arrangement of ferns, grasses, and leaves, while the effects of the light passing through the rich autumnal colours is very fine. Leaves so arranged will preserve their beauty through the whole of the winter. Screens of this kind have lately been advertised in London, in which the ferns, etc., prepared by a peculiar process, are guaranteed by the inventor to retain their verdure for years.

CULTURE OF THE ONION.—The best soil to grow onions in is a rich, deep, strong, and loamy one, and the best manure is deodorized night soil mixed with pigeon or fowl dung. The beds should be marked out early in November, and laid up in rough ridges so as to expose the soil to frost. If large onions are wanted, some guano should be sprinkled on the bed in February. This should be raked in, and in a fortnight afterwards the seed may be sown. When guano is used, the seed ought never to be put in before a fortnight's time has elapsed, otherwise the guano will kill the seed; but after a fortnight it is safe to sow it. During June onions are much troubled with the maggot. The grub which does the mischief is white, shiny, and cylindrical; it measures from a quarter to half an inch in length; it eats its way into the heart of the onion and destroys it. As the fly lays its eggs within the leaf-sheaths of the plant close to the ground, any noxious top-dressing not injurious to the plant, may be used to keep the fly at a distance. The best remedy known is a heavy top-dressing of soot, and it is astonishing what a large quantity can be used without injuring the plants. Nothing equals a top-dressing of soot for carrots when attacked by maggots deposited by the carrot fly. As the onion will root down from eighteen inches to two feet, deep trenching and plenty of manure are necessary, and will be found the best preventatives of the vermin that destroy the onions.

## EXHIBITIONS AND MEETINGS IN FEBRUARY.

3.—LINNEAN SOCIETY.—*General Meeting at 8 p.m.*

16.—ROYAL HORTICULTURAL SOCIETY.—*Meeting of Fruit and Floral Committees, 11 a.m.; Scientific Committee, 1 p.m.; General Meeting, 3 p.m.*

17.—LINNEAN SOCIETY.—*General Meeting, 8 p.m.*

26.—ROYAL BOTANIC SOCIETY.—*General Meeting, 3.45 p.m.*

## TO CORRESPONDENTS.

**PRUNING WALL TREES.**—*T. P. Parsons, Moreton-in-Marsh.*—No. 1. The laterals of pear trees trained horizontally should be six inches apart, and if they are closer than this they should be thinned at the winter pruning. In removing surplus shoots, cut them away close to the horizontal branch, otherwise, in the course of the summer following, they will produce a number of young shoots. The remaining laterals that are not furnished with fruit spurs should be pruned back to the third bud.—2. There is some difficulty in giving advice on the pruning of the fruit spurs, as so much depends upon their size, and the position on the branch. They must not be too large, and they should be kept as close as convenient to the branches. Therefore, if the fruit spurs are in large clusters, a portion of the cluster should be cut away, and the spurs farthest removed from the branches should be selected for removal.—3. If there is any deficiency of fruit-bearing spurs, a portion of the shoots of last year's growth may be laid in their full length, and the best way to deal with them is to pull them down in a more or less perpendicular direction. In the course of the summer following, flower-buds will be produced throughout their whole length, and in the second season a grand crop of fruit will be the result.—4. Plums are usually produced on spurs, and these should be kept to within five or six inches of the wall, by removing at the winter pruning a portion of the cluster of spurs, where they project to a greater distance from the wall. The young shoots, if crowded, must be thinned, and those remaining, if not required for filling vacant places, should be pruned back to the third or fourth bud.—5. The shoots, young and old, should be laid in about five inches apart.

**ROSE PERLE DE JARDINS.**—*Third Water, Silsdon.*—The flowers of this rose vary from straw-colour to canary-yellow, and are of a comparatively large size and double. It has a vigorous habit. It is of much the same degree of hardiness as the majority of the tea-scented varieties. Perfection de Monplaisir has canary-yellow flowers, of medium size, and is of vigorous growth, and in every way desirable. The best of the white-tinted rose hybrid perpetuals is Madame Lacharme, a really first-class rose. We have no recollection of your previous communication.

**FORCING FRENCH BEANS.**—*Amateur.*—To force French beans successfully, a temperature of 70° by day and 65° by night is essential, for with less heat they do not make a satisfactory growth and bear good crops. A pit or house of any kind will do, as they are by no means particular as to the form of structure, provided they can have a light position, and the advantage of plenty of warmth combined with an abundance of atmospheric humidity. Pots eight inches in diameter are the most suitable in which to fruit the beans, and if there is plenty of room they may be sown in them. If space is not over-abundant, they should be sown in five-inch pots, and be shifted when sufficiently advanced. As a rule, it will be found, for successive crops, to be more convenient to sow in pots of the smaller size. Five plants will be sufficient for each pot, but the safest course is to sow seven beans in each, and draw two of the plants out when they are a few inches in height. A compost of two parts loam and a part each of leafmould and old hotbed manure, is probably the best that could be prepared, for it must be light and rich. In preparing the large pots, place a handful of crocks in the bottom, cover with a layer of leaf-mould, and fill to within three inches of the rim with the prepared compost. Insert the beans in the soil at the rate of seven to each pot, and place near the glass, for if too far removed they will become tall and leggy. After the first pair of rough leaves is developed, fill the pot to nearly level with the rim, and in doing this, be careful not to damage the tender stems. If they are sown in small pots, they will require shifting into others of larger size when two pairs of the rough leaves are developed. They should be potted rather low, so that a small quantity of the fresh compost may be placed about the stems, to strengthen them. When in full growth, they should be watered liberally and be syringed overhead twice daily. This frequent syringing is necessary to prevent the red spider becoming established on the foliage.

## TRADE CATALOGUES.

BARR AND SUGDEN, 12, KING STREET, COVENT GARDEN, W.C.—*Descriptive Catalogue of Choice Seeds for the Flower and Kitchen Garden.*

R. BUIST, SEN., SIXTY-SEVENTH STREET AND DARBY ROAD, PHILADELPHIA.—*Select Catalogue of Greenhouse, Hothouse, and Hardy Plants, Bulbs, etc.*

MESSRS. J. CATTELL, WESTERHAM, KENT.—*Spring Catalogue of Kitchen Garden, Floricultural, and Agricultural Seeds, etc.*

J. CARTER AND CO., 237 & 238, HIGH HOLBORN, W.C.—*Carter's Gardeners' Favemecum and Seed Catalogue.*

DANIELS BROTHERS, NORWICH.—*Illustrated Guide and General Seed Catalogue for 1876.*

DICKSON, BROWN, AND TAIT, 43 & 45, CORPORATION STREET, MANCHESTER.—*Catalogue of Vegetable and Flower Seeds.*

DOWNIE AND LAIRD, 17, SOUTH FREDERICK STREET, EDINBURGH, AND ROYAL WINTER GARDEN, WEST COATES.—*Descriptive Catalogue of Garden, Flower, and Agricultural Seeds.*

DRUMMOND BROTHERS, 52, GEORGE STREET, EDINBURGH.—*Catalogue of Vegetable and Flower Seeds, and French Hybrid Gladioli.*

HENDER AND SONS, BEDFORD NURSERY, PLYMOUTH.—*Illustrated Catalogue of Vegetable, Flower, and Agricultural Seeds, etc.*

HOOVER AND CO., COVENT GARDEN, LONDON, W.C.—*Gardening Guide and General Catalogue for 1876.*

LOUIS VAN HOETTE, ROYAL NURSERIES, GHENT, BELGIUM.—*Catalogue of Gesneraceous Plants, Roses, Begonias, etc.*

J. W. MACKEY, 40, WESTMORELAND STREET, DUBLIN.—*Annual Descriptive Seed Catalogue, and Amateur's Guide.*

THE PINE APPLE NURSERY COMPANY, MAIDA VALE, EDGWARE ROAD, LONDON.—*Illustrated Catalogue of Kitchen Garden, Farm, and Flower Seeds, Bulbs, Tools, etc.*

W. E. RENDLE, 3, WESTMINSTER CHAMBERS, VICTORIA STREET, LONDON, S.W.—*Catalogue of Patent Plant Houses, Conservatories, Plant Protectors, etc.*

ROBERTSON AND GALLOWAY, 157, INGRAM STREET, GLASGOW, AND THE HERMITAGE, HELENSBURGH.—*Catalogue of Gladioli and Lilioms; also Descriptive Seed Catalogue and Amateur's Pocket Guide to the Kitchen and Flower Garden.*

P. T. RODGER, SHIPQUAY STREET, LONDONDERRY.—*Descriptive Catalogue of Select Kitchen Garden, Flower, and Farm Seeds, Manures, etc.*

W. RUMSEY, JOYNING'S NURSERIES, WALTHAM CROSS.—*Catalogue of Select Garden, Flower, and Farm Seeds, Potatoes, etc.*

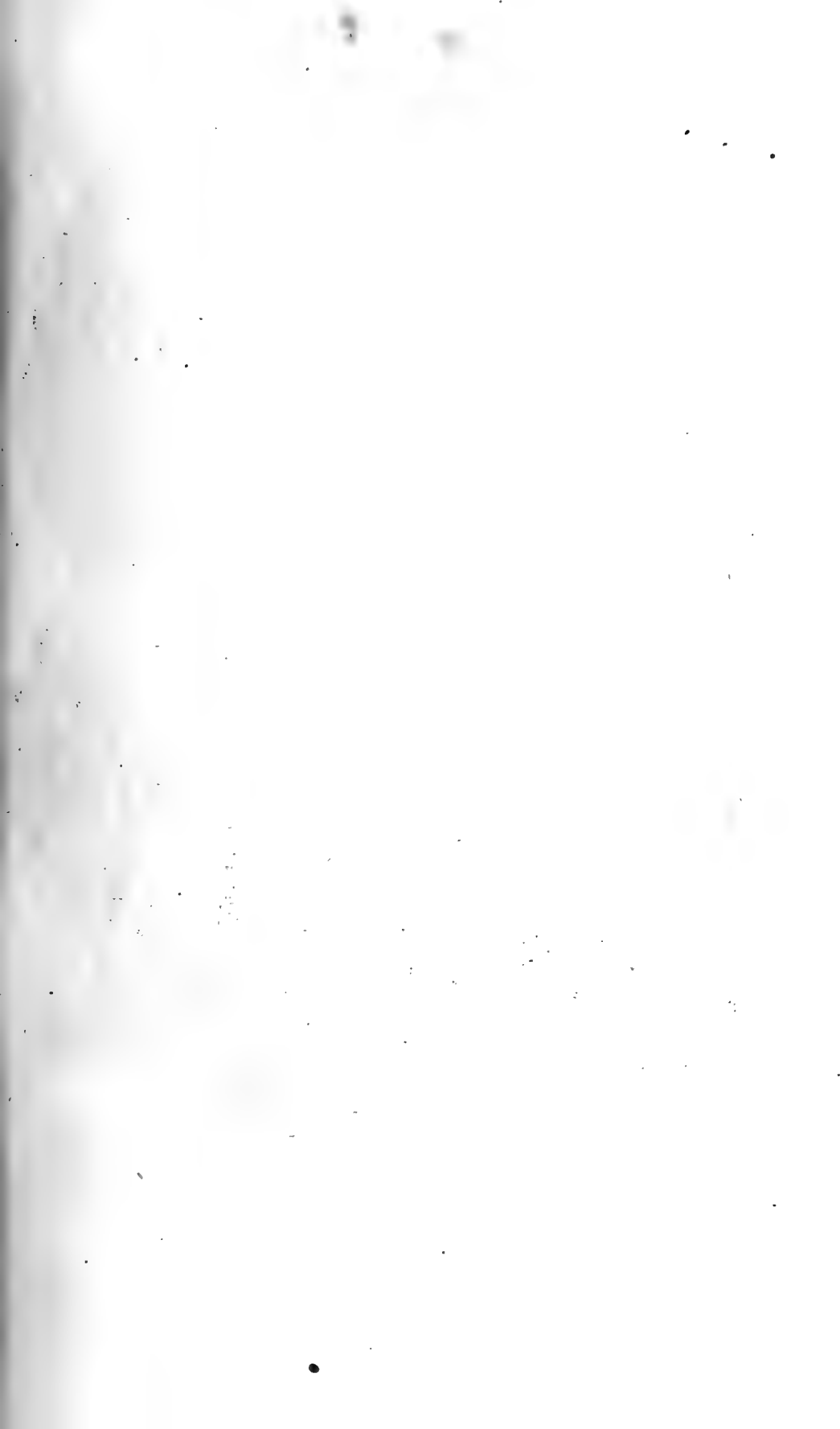
SMITH AND SIMON, 36 & 58, HOWARD STREET, ST. ENOCH SQUARE, GLASGOW.—*Cultural Guide and Descriptive Seed Catalogue, etc.*

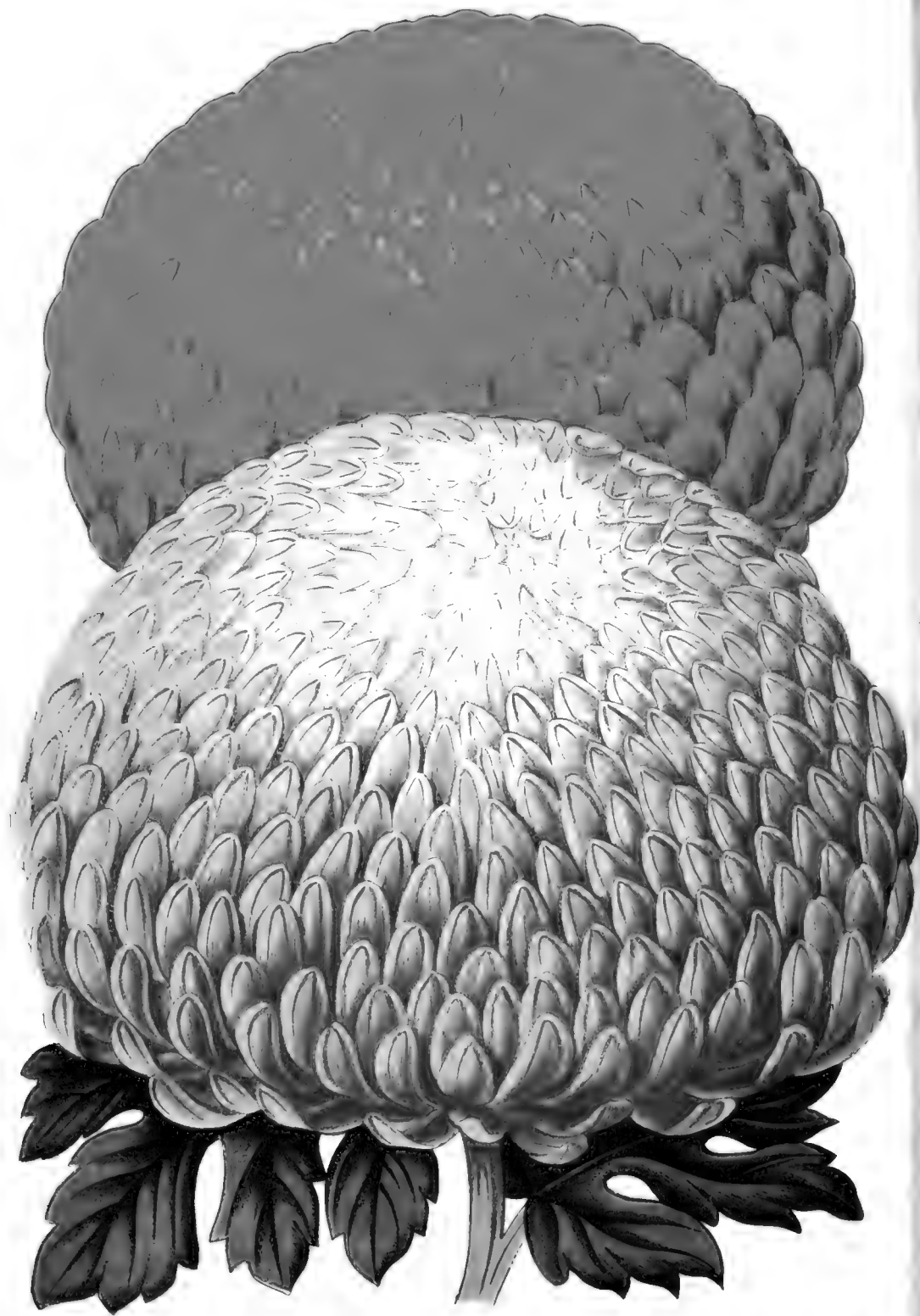
SUTTON AND SONS, READING.—*Sutton's Amateur's Guide and Illustrated Seed Catalogue.*

WAITE, BURNELL, HUGGINS, AND CO., SOUTHWARK STREET, LONDON, S.E., AND 32, RUE SERY, HAVRE, FRANCE.—*Wholesale Price Current of Seeds, etc.; also Wholesale Catalogue of Gladioli, Lilies, etc.*

J. C. WHEELER AND SONS, NORTHGATE STREET, GLOUCESTER.—*Illustrated "Little Book," or Short Select Seed List for 1876.*

B. S. WILLIAMS, VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, LONDON.—*Descriptive Catalogue of Flower, Vegetable, Agricultural Seeds, etc.*







## CULTIVATION OF CHRYSANTHEMUMS.

BY J. JAMES,

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*(With Coloured Plate of Chrysanthemums Venus and General Slade.)*

SO much has of late years been written on the cultivation of the chrysanthemum, that there is now little to be said in any way new, yet it is hoped that a brief outline of the method adopted in the production of first-class specimen plants and cut blooms, will be alike interesting and instructive to many readers of the FLORAL WORLD. The chrysanthemum has, upon more than one occasion, been designated "the poor man's flower;" but it has no good claim to that title, and it would be nearer the mark were it to be called the flower of the middle classes. It is so hardy that there is no risk of its being killed by frost, and it will grow freely in the smokiest of atmospheres; but to have it in anything like perfection, a considerable amount of labour is required, and to be able to enjoy the flowers at all, the shelter afforded by glass is imperative. Therefore, as it is exceptional to meet with greenhouses and conservatories in the poor man's garden, it can hardly be a flower specially suited to his requirements. The exhibitions of chrysanthemums, which are now held all over the country, and enjoy so large a share of popularity, are mainly supported by the middle classes; for it is in the gardens of the well-to-do amateur that the majority of the plants and blooms are produced, and the visitors consist chiefly of persons in a similar station of life. These exhibitions, there can be no question, have done much to popularize the chrysanthemum, for one can hardly see a group of really well-grown specimens without being filled with a desire to have a similar group in the conservatory. Hence it is that accessions are continually being made to the number of cultivators of the chrysanthemum, and that information in reference to the cultural details is constantly in request.

I shall say nothing in praise of them, for it is now generally acknowledged that they are unequalled for the decoration of the conservatory during November, and I feel that I shall be doing better service by at once passing on to a consideration of the cultural details.

DWARF SPECIMENS trained to a convex surface, are more easily produced than the standards and pyramids, and in commencing the cultivation of specimens, they should be taken in hand in preference to the other forms. The period in which the plants have to make their growth is comparatively brief, and to take advantage of every day, as it were, is of the utmost importance. The best course is to strike the cuttings towards the end of November or in January, and if it is not convenient to strike cuttings in either of these months, experienced cultivators pot up, some time in February, suckers that have not been drawn by overcrowding. Every effort is very properly made to have a stock of thrifty plants nicely established in small pots by

the middle of March. The suckers are now the best for those who omitted to strike the cuttings at the proper time; for if they are taken off properly and potted, they will become established, and be ready for shifting into larger pots at the proper time. To separate them from the old stool, turn the plants out of the pots, and shake away the soil, and with a sharp knife detach them with a small portion of root. Put them singly in small pots, and place in a frame where they can be kept rather close and warm for a few days, until they begin to root freely into the new soil. The suckers that rise from near the surface, and are of a medium height, are preferable to those having a considerable portion of stem underground. So important is it to have well-rooted plants early, that when extra large specimens are required, cultivators select in the autumn a sufficient number of the medium-sized plants that have not been trained, and after they have been cut down, and when the suckers rise freely, they remove all but one. They are afterwards taken out of the pots, the soil shaken away, the roots trimmed, and then repotted. A fresh compost, and pots of the smallest size into which the roots can be put are used. The early part of April may be mentioned as the most suitable time for shifting those raised from cuttings and suckers into larger pots, but the actual date will depend upon the state of the plants, for they must be shifted when the pots are well filled with roots, and not before. For this shift employ pots six inches in diameter, and let them be thoroughly clean and well drained.

About the middle of March nip out the point of each plant, to promote the production of side-shoots, and by the time they are ready for repotting they will have commenced to break freely, and it may now be said once for all, that at no stage should the repotting and the stopping be done at the same time. Until the middle of May keep the stock in a cold frame, and maintain a free circulation of air amongst the foliage, by tilting the lights at the back, and in mild weather in the front also. Stop the secondary shoots once or twice, according to the progress made, but they must not be stopped until they are four or five inches in length, for a moderate quantity of strong shoots are the most desirable at the commencement.

After the middle of May all danger from frost, so far as the chrysanthemums are concerned, will be past, and the whole stock of plants may be moved to the open air. A sunny situation must be selected, and to prevent injury to them from drought, and also to lessen the labour of supplying them with water, plunge the pots in a bed of coal-ashes. This must be of a sufficient depth for the plants to be stood upon inverted flower-pots, to keep worms out of the soil, and to allow the surplus water to drain away quickly, and to prevent their rooting through. For this purpose three-inch pots will be suitable for standing the plants upon until they are put into the pots in which they are to bloom, and then others six inches in diameter will be required.

In the second or third week in June shift into the pots in which they are to bloom, and the size of these must be regulated by the limit put upon the size of the pot by the rules of the exhibition at

which it is intended to compete. At the majority of the shows either eight or nine-inch pots are allowed, sometimes one and sometimes the other; and the intending exhibitors must ascertain the size of pot in which the plants are to be shown before they receive the final shift. Sometimes larger pots are permitted, and they should, as a rule, be put into the largest size allowed by the schedule. The pots must be carefully crocked; first of all lay a large concave piece over the hole, and then form a layer about two inches in thickness, with crocks of medium size, and from the heap of compost select the roughest portion, to form a covering to the drainage, and keep the soil in its proper place. The crocks from the bottom of the ball must be removed, and the roots round the outside carefully loosened with a pointed stick to facilitate their striking into the new soil. The compost for the large flowering kinds should consist of six parts of loam, two parts of manure, and one part of sand, and for the pompon varieties two-thirds loam and one-third manure, with a rather more liberal proportion of sand. Firm potting is desirable, and sufficient space must be left on the surface to hold a goodly quantity of water; for pots of the usual sizes rather more than an inch from the upper edge of the rim will be required.

If the growth has been stopped in the manner suggested above, they will, by the time they receive their final shift, be well furnished with shoots, and these must be tied out loosely with the aid of neat stakes, and immediately the plants are again established be stopped, by having the points of the shoots nipped out.

In the first week in July training must be commenced in earnest, and the outside shoots brought down in an horizontal direction. Some growers use stakes only, but it is preferable to have a ring of stout wire, from thirty inches to three feet in diameter, to which to tie down the shoots. The ring is formed by simply securing the two ends of the wire together; and by means of two cross pieces of wood, or of stout wire, placed at right angles, and four pegs, it can be fastened down as firmly as could be desired. The shoots towards the middle of the plant must be fastened down to short stakes. The stopping must be followed up according to the progress made, and between the 10th and 20th of July stop for the last time, and continue to train the shoots to form a well-balanced specimen. The training, especially where there are any stout shoots to be brought down horizontally, should be done when the sun is shining brightly, for they are then more flexible than at any other time, and are not so likely to snap. The training must be completed by the third week in September, excepting it be the regulation of the points of the shoots when the buds are partly developed, to secure a regular disposition of the flowers over the entire surface. If the training is deferred beyond this period, there will not be time for the foliage to assume its natural form before the flowers are developed. Only one flower should be left to each shoot, and, as a rule, all but the terminal bud to each must be removed as soon as they are far enough advanced for it to be done. Early in October remove them indoors, and place in a light and airy structure, and as near the glass as can be conveniently done.

March.

*Chrysanthemums* require liberal supplies of water throughout, but care must be taken not to overwater them when newly potted. After the pots in which they are to bloom are well filled with roots, the use of liquid manure may be commenced. Guano mixed with soft water, at the rate of half an ounce of guano to the gallon of water, makes a very excellent stimulant for *chrysanthemums*, and after it has been supplied to them for six weeks or so, a double quantity of guano—or one ounce to the gallon—may be employed. It should be applied alternately with soft water, and all watering should be done in the evening, or early in the morning. In warm and bright weather syringing them overhead once a day will be most advantageous, inasmuch as it will refresh the plants, and assist in the maintenance of the foliage in a clean state, by the removal of the dust that usually settles upon it. They must not at any time suffer from dryness at the roots, or they will lose the greater portion of the lower leaves.

PYRAMIDAL SPECIMENS require precisely the same culture as the dwarf examples, with the exception that they have to be trained differently. The young plants required for pyramids should not be stopped until after they have been shifted into the six-inch pots. When established in these nip out the points, and as soon as the shoots are a few inches in length, select the one at the top, and train it in an upright direction, and tie the others out loosely. Stop again when the top shoot has attained a length of nine inches, and again select the uppermost shoot for a leader, and repeat this process until the desired height is attained. Specimens about thirty inches high, and twenty-four inches across the base, are the most desirable as regards size, and when attempts are made to have them larger, they are frequently objectionably thin, both in foliage and flowers. A stake for the support of the leader will be required from the first, and at the time mentioned for putting the trainers to bush specimens, fix a stout wire ring, twenty inches in diameter, down on the pot, and a stout stake thirty inches in height in the centre, and let it be firmly inserted in the soil. Then from a framework, by means of pieces of wire secured at the lower end to the ring, and at the upper end to the top of the stake. The whole of the framework must be well covered, and the flowers should be allowed to project about four inches beyond it. The pomponé varieties are more easily grown in the form of pyramids than the large flowering sorts. The latter are wonderfully effective trained in that form, but even the most experienced cultivators frequently fail in producing first-class specimens.

STANDARDS when nicely grown are very effective, both in the conservatory and upon the exhibition stage. The best course is to select an early struck cutting or a sucker, and shift on as advised for the dwarf specimens. Instead of stopping the plants, encourage the development of a straight stem, and nip off the side-shoots as fast as they make their appearance. Avoid injury to the leaves, and when the stem has attained a height of two feet nip out the point. After the stopping they will break freely down the stem, but only those shoots within four or five inches of the top must be allowed to

remain. All the others must be removed, and those remaining, when six inches or so in length, will require to be brought down in an horizontal direction. A ring of wire, about fifteen inches in diameter, should be fixed to the top of the stake for tying the shoots to. The heads are trained into form in much the same manner as the bush specimens, only of course they are much smaller. The flowers of these as well as of the pyramids and bushes, must be thinned to one to a shoot. Pompones and large-flowered kinds make splendid standards.

CUT BLOOMS are produced by plants that are not stopped at all. They are shifted on as advised for the specimens, are potted in a similar compost, and receive the same attention, with the exception that they are not stopped or trained. They will produce three or four shoots each, and these must be allowed to attain their full length, and when the buds are sufficiently developed they must be thinned to one to each shoot. The plants are by no means ornamental, but it is only by limiting the number of blooms to about three to each plant that flowers equal to the magnificent examples met with at the exhibitions can be produced.

CHRYSANTHEMUMS FOR THE CONSERVATORY are not required to be so stiffly trained as for exhibition purposes; indeed, plants from two to four feet in height, with about a dozen shoots each, are more useful for decorations than the convex specimens, which are so attractive upon the exhibition stage. A grand display of bloom may be produced by striking the cuttings in March, and then shifting them on, as advised for the specimens. They will require stopping four times, the last stopping to be done towards the end of July. The shoots must be tied out loosely, to afford room for the proper development of the foliage upon each shoot, but the shoots must not be brought down in an horizontal direction, or closely trained in any way. Pompones required for decorations in six-inch pots, should be struck about the end of April, be potted off singly when nicely rooted, and towards the end of June be put into the pots in which they are to flower.

## PROTECTION OF CHOICE FRUITS FROM SPRING FROST.

BY W. JOHNSON.



AS it is possible to do a large amount of injury to wall trees in the spring by an injudicious application of protecting materials, a few words of advice may at the present moment be of some service to those who have fruit trees trained to walls, and are without professional assistance. It is unnecessary to refer to the immense amount of mischief that is in many years done to the blossom of the majority of the hardy fruits, for that is sufficiently known already. The flowers of the peach and nectarine trees are usually cut off first, for

March.

as they are more tender and bloom earlier than the apple and the pear, they are more susceptible to injury. They should, therefore, have the first attention, and if, after they have been sufficiently protected, suitable materials can be provided for the other fruit trained to the walls, there should be no hesitation in sheltering them from the destructive effect of spring frosts. After the peaches and nectarines, protect the apricots, which also flower very early, and then follow with the cherries, pears, and plums, in the order in which they are placed here. In the protection of the blossom of fruit trees, it must be constantly borne in mind that they are very much less susceptible to injury when perfectly dry. I cannot at this moment say exactly how many more degrees of frost they can bear without injury when quite dry, but I know there is a very considerable difference. There is some difficulty in maintaining the requisite degree of dryness, but much may be done without any great outlay. Glass copings are now manufactured for the purpose, but they are rather expensive, and in putting them up and taking them down again there is a considerable risk of breakage. A coping of wood answers quite as well, for it interferes but little with the light, and it is very much cheaper, and can be stowed away more readily. Copings eighteen inches in width are the most suitable, and these can be made by fixing two deals half-an-inch in thickness and nine inches in width, side by side. Nine-foot lengths are the most convenient to handle, and to hold the boards together firmly there should be three cross-pieces, two near the ends and one in the middle. Strips of deal, an inch in thickness and three inches in width, will be of sufficient strength to fasten the boards together. To fix the coping to the wall, provide each length with two hooks, one to be near each end, and to be driven into the edge of the board; and to correspond with these, fix, about two inches below the coping of the wall, eyelets of the proper size and distance apart, for receiving the hooks. When merely hooked up they will hang down, and to hold them out at the proper angle, provide poles of moderate strength; fix them in a rather slanting direction, and let them be of a sufficient length, when driven into the ground, to hold the coping out with just sufficient slope to throw off the wet. One of these will suffice for each length, and should be fixed near the centre. The coping should, of course, rest upon the poles, and then, with a small screw near the end of each, and a corresponding screw in the coping, and a piece of string, the coping can be held so that it cannot move one way or the other. The cost of coping for a few of the choicest trees will not be great, for it may be made by a village carpenter, or even a bandy labourer. It is not suggested that where there is a considerable wall surface all the trees should be provided with copings, although the cost would soon be repaid by the superiority of the crops.

Nets, canvas, tiffany, and other textile fabrics, may be employed for the protection of fruit trees, but unless the covering can be taken off and put on, as the state of the weather may render necessary, nets possess an important advantage, inasmuch as they do not interfere with the circulation of air about the trees. A stout canvas

will perhaps afford the most effectual protection from a severe frost, but it cannot be recommended, for, unless it can be moved during the daytime, or at least during periods of bright warm weather, it will do more harm than good, and, without the aid of rings and iron rods or rollers and lines, this work will be attended with much trouble. Canvas or netting should be fixed along the edge of the coping by means of small hooks placed at intervals, and be brought down to within about fifteen inches of the ground, and the nets should be double. The netting may be new, but old fish nets, which can be purchased at a very low rate, are in every way suitable. When no coping is fixed, the upper edge of the protective materials must be fixed just under the capping to the wall, and be kept at a distance of eighteen inches or so from the trees with the aid of poles placed in a slanting direction.

Very efficient protection may be afforded to wall fruits with the aid of branches of the spruce fir and various evergreen shrubs. These must be divided into rather small portions, as branchlets from fifteen to twenty-four inches in length are the most convenient to place over the trees. In covering wall surfaces with these, commence at the lower part and work upwards, and use nails about two inches in length to hang the branches upon. Frequently, they are hung upon the nails with which the shoots are fastened to the wall, but it is not good practice, for, either in putting the branches upon the trees or taking them off, many of the nails are drawn out and the shoots displaced. Branches of fir and evergreens are the best of all for the protection of pyramidal and bush trees, for by hanging them rather close together upon the outer branches, they afford the flowers and tender fruits most efficient protection from frost.

As it is essential that the light and air should not be excluded from the young growth a day longer than can be avoided, the coverings, whether nets, canvas, or the more primitive branches, must be removed as soon as it can be done with safety. The young fruit is in as much danger of being cut off as the flowers, and until the middle of May we are not safe from frosts. It may, however, be regarded as fairly out of danger when sufficient growth has been made to envelope the fruit with foliage. In some of the books on fruit culture, the cultivator is advised to commence disbudding as soon as the shoots are an inch or so in length, but I would not have even a leaf removed until all danger from frost is past, because of the protection afforded by the foliage.

## HOTBEDS, AND HOW TO MANAGE THEM.

BY A KENTISH GARDENER.



**H**OTBEDS, when properly made, are of such immense service during the spring season, that wherever gardening is carried on with some degree of spirit an effort should be made to have one. With the aid of a one or two-light frame, placed upon a bed of well-sweetened fermenting materials, the work of propagating a stock of bedding plants is

March.



facilitated in a wonderful manner. Cuttings of all kinds take root in a remarkably short space of time, and seeds germinate so quickly, that those who have been accustomed to raise seedlings in the greenhouse or similar structures are usually quite startled by the rapidity with which the seedlings make their appearance. It would, indeed, be difficult to place too high an estimate upon the assistance a hot-bed is capable of affording to the amateur and professional gardener alike, for it is not only useful for raising seedlings and the striking of cuttings, but it is also of immense value for starting such things as achimenes, caladiums, and gloxinias, which commence to grow more vigorously when the soil is warmed by the heat derived from a bed of fermenting materials. Having thus far set forth the advantages of a hotbed, it is proper to say that its formation is attended with considerable expense and some little trouble. The manure must be fresh from the stable, or nearly so, and this, in some localities, is difficult to obtain, and unless it is well made and carefully managed the results will be unsatisfactory, and much disappointment will ensue. Therefore, those who determine to have a hotbed should make up their minds to form it in the best possible manner, and not to begrudge the time that must be devoted to its management.

Stable manure that has not been laid in a heap a sufficient time to become exhausted must form the staple, but it is not necessary the bed should consist exclusively of that expensive material. To be of any real service, it must be of considerable size, and very often the bulk may be increased by the addition to the manure of dry leaves or dry litter of some kind. In very many places, there is a lot of dry, littery hay and straw of no use whatever, excepting to harbour rats, and in the formation of a hotbed this may be made to do good service. Litter and leaves will help to increase the bulk and prolong the heat, for by preventing a too rapid fomentation the manure will not be so soon exhausted, and the heat will consequently be retained a greater length of time. The length and width of the bed will, of course, be regulated by the dimensions of the frame to be placed upon it, but it should be not less than four feet high when made up, for if of a less height it will, as the gardeners say, sink down to nothing before it has half done its work. If sufficient materials can be obtained, it ought to exceed the frame in length and width by about three or four feet, as the heat is not so soon blown out of it as when it is only just large enough to receive the frame.

To make up a thoroughly good bed, the materials must be in a nice moist state, and if, when they are taken in hand, they appear too dry to ferment quickly, throw a few cans of water over the heap. The first step to be taken is to well shake out the manure and whatever materials are to be added to it, and in doing so, form a compact heap. In about three days it will have become quite hot, if of the degree of moisture already mentioned, and it will require turning over. As in the formation of the heap, the manure must, in the turning over, be shaken out lightly, and if it has become dry in the centre of the heap, it must have a few cans of water thrown



over it again. If the manure was very fresh when first taken in hand, it will require turning over a second time, otherwise once will suffice; and in a week or so after it was thrown together in a heap, the bed should be made. Mark out with a few pegs the space it is intended to occupy; make sure of having the sides and ends perfectly straight, and care must be taken to have the materials packed firm round the outside. The bed must not be trodden, but it ought to be well beaten with the fork, for it will then heat more steadily and be altogether better. The frame may be placed upon the bed immediately it is made, and for the first few days the lights must be tilted a little night and day to allow the unpleasant odour arising from the manure to escape. In three or four days after the bed has been made up, preparations may be commenced for putting it into working order. In the first place, lay strips of turf, cut rather thin, over the surface, and upon this form a layer, four inches in thickness, of sifted coal-ashes. The turf is to prevent the heat rising too freely, and the ashes for forming a bed in which to plunge the pots. If after a day or two the heat of the bed does not exceed  $85^{\circ}$ , the sowing of seeds and the insertion of cuttings may be commenced. An experienced hand will be able to determine the heat by means of a stick thrust into the bed, but the amateur should partly bury a thermometer in the ashes, and uncover it occasionally to ascertain the heat, for if the bed becomes too hot—as for example, above  $85^{\circ}$ —there will be a risk of the cuttings or tender seedlings being injured by an excess of heat. Instead, however, of waiting until the heat has declined materially, it will be better to commence the work of propagation, and to stand the pots upon the surface of the bed, for they will not be so fully exposed to the effects of the heat as would be the case were they plunged. It may also be well to mention here that should the heat increase, as it will do sometimes, after the pots are plunged, they must be lifted out of the bed as quickly as possible, and be re-plunged when it can be done with safety.

The lights must be covered at night with mats, and they should be placed so that very little of the ends hang over the sides of the frame, for the steam will rise freely from the manure on the outside, and the mats, when they hang over to any considerable extent, often “draw” the steam into the frame, with the result that a portion of the occupants are injured. This precaution is especially necessary when linings of manure are applied to the bed, after it has been made up some time, for the purpose of maintaining the heat, for the steam from fresh manure is very injurious to tender vegetation when in a confined space. It is also of importance to leave a little air, at night as well as during the day, to allow the excess of steam to escape, and for this purpose a piece of wood about half an inch in thickness, placed under the end of the light at the back of the frame, will suffice for the purpose. During the day very little ventilation will suffice, for if the sun shines brightly, the glass must be covered with canvas or mats, for newly-inserted cuttings will not bear the exposure to the sunshine nor the free circulation of air that would be necessary for keeping the temperature within proper

limits. The seedlings will bear more light and air than the cuttings, and they should as far as possible be placed on one side of the frame by themselves, so that they may not be shaded more than is necessary. The cuttings must be exposed as fully to the light and air as they can bear, but as no definite rule can be made for regulating the shading and air-giving, it will be well to say that the leaves will flag immediately the light and air are too much, or the supply of water insufficient for them, and that if they are closely watched, as they must be to ensure successful results, there will be no difficulty in arriving at correct conclusions upon these points.

The cuttings of all bedding plants, and, in fact, of everything not requiring a stove temperature, should be removed from the propagating bed to a warm, close corner of a greenhouse or pit, immediately they are struck, and the stove plants to the proper structure for them. In the case of the bedders, it is a very excellent plan to have a hand-glass placed in the greenhouse, and to put them in this and keep close for a few days, for the heat and humidity of the frame will have made them so tender that sudden exposure to a free circulation of air will be most hurtful. They should, when hardened sufficiently, be potted off separately, or be planted in shallow boxes, for if they are left long in the cutting boxes they become weak and spindling, and are a long time in acquiring strength. As soon as the last batch of cuttings and seedlings have been removed from the frame, take away the ashes, and in the centre of the lights form hillocks of a suitable compost, and plant out melons or cucumbers. To secure a crop at the earliest possible moment, sow the seed about three weeks beforehand, and pot off separately, and shift into six-inch pots immediately they acquire sufficient strength for the successive removals.

## DAHLIAS FOR BEDS AND BORDERS.

BY JOHN WALSH.



DAHLIAS contribute so much to the attractiveness of the flower garden during the summer and autumn, that I hope, as an old cultivator, to be excused in asking for a little space to say a word or two in their favour, and to remind readers that to have a stock of strong plants for bedding out at the end of May, preparations must be commenced at once. Especially suited are they to the requirements of those who have but little space to winter bedders, for from the time of the roots being lifted in the autumn, until they are started into growth in the spring, they can be kept in a cellar, loft, shed, or other convenient storehouse where they will be cool, dry, and safe from frost. The only time they require the aid of glass is, from the early part of March until the middle of May, a period of two months, and during one half at least of this time they can be placed in a turf pit, or other "rough-and-ready" structure.

Some of the varieties, it is proper to say, make splendid bedders,

and as they differ in character from the ordinary run of bedding plants, they afford a most pleasing variety, and are very effective. It is, however, as border flowers where they are seen to the best advantage, for in conjunction with the herbaceous phloxes, tiger lilies, tritomas, hollyhocks, and gladioli, they make a grand display, surpassing in richness the best combination of sub-tropical plants that are within the reach of amateurs.

If it is desired to work up a stock in the cheapest manner possible, a few dry roots should be obtained, and at once placed in a temperature of about 60° to start them into growth. The pot roots as usually supplied from nurseries are of very little service to the amateur, for owing to their having been kept throughout the previous summer in little pots, they are of so small a size that they cannot produce many shoots, and very often, unless they are assisted with a brisk bottom-heat, they will not break at all. Therefore unless strong roots, lifted from the borders last autumn, can be procured, it will be better to wait until young plants, costing from three to six shillings per dozen, can be obtained. These can usually be had about the 1st of May.

For the information of those who are able to obtain from friends or otherwise a few roots of the right kinds, I will briefly point out the way by which a comparatively large number of plants may be obtained from each. The information will probably be also of service to some of the readers who have a few roots of their own growth. First of all, place the roots in shallow boxes, with a layer of some light soil underneath, and fill the space between them with the same kind of soil, and put them in a pit or house where they will have the assistance of the temperature already mentioned. To allow of as many roots as possible being arranged in each box, and thus economize space, cut the ends of the roots off. Provided the soil is maintained in a nice moist state, the young shoots proceeding from the cluster of buds round the base of the old stem will soon make their appearance. These, when from three to four inches in length, must be taken off and put singly into small pots, filled with some light sandy soil. Experienced propagators usually allow them to attain a length of six inches or so, and take them off above the first pair of leaves, as they are then able to obtain a second batch of cuttings; but owing to the succulence of the cuttings, a brisk temperature and some skill are necessary to secure success.

But by removing them when of the length mentioned, with a very small slice of the old root to form a firm base, they can be struck without the aid of bottom-heat, and with very little risk of their damping off. If it is desired to obtain from two to three plants only from each root, they should be taken out of the box and split into two or three pieces; each portion to have one shoot and a part of the old root, and be put into a pot proportionate to its size. With the assistance of a genial warmth, they will soon become established, and commence to make a vigorous growth.

Dahlias must not be kept in the propagating pit, or indeed any warm, close structure, longer than is necessary, because of their liability to become drawn when in a temperature in excess of their

requirements. Therefore immediately they are rooted, remove to a cold frame and keep close for a few days. Then shift into five-inch pots, with a mixture of loam two parts, and manure one part, and ventilate freely to secure a sturdy growth. After the 1st of May the lights must be drawn off altogether during the day, to harden the plants sufficiently to be bedded out about the third week of the month.

These flowers make the most satisfactory growth in a deep rich soil, and some time previous to planting apply a liberal dressing of manure, and dig the ground deeply. It is of no consequence whatever whether the manure is quite fresh or partly decayed, although some cultivators recommend the latter as being preferable.

The third week in May has been mentioned as the most suitable time for planting, and it now only remains to be said that for bedding purposes the dwarf varieties should be twenty inches apart, and the tall sorts thirty inches. When planted in borders they should be put in the second or third row, according as they are dwarf or tall, and at regular intervals; the distance to be regulated by the plants occupying the intervening space. The only attention requisite through the summer will be to place stakes to them according to the progress made.

The best six dwarf Dahlias for bedding are *Alba floribunda*, *nana*, white; *Pluton*, yellow; *Rising Sun*, scarlet; *Rose Gem*, rose; *Crimson Gem*, crimson; and *Royal Purple*, purple.

## CULTIVATION OF AZALEAS.

BY W. BRADBURY.



GREENHOUSE AZALEAS now form a group of plants of so much importance for the decoration of the conservatory during the spring and early summer months, that it may not be amiss to refer to their cultivation. Of late years increased attention has been paid to the improvement of the habit of the plants, and the size and the colouring of the flowers, and as the results of the labours of raisers of new varieties, a large number of sorts, having flowers of immense size and colours of surpassing richness and beauty, have been introduced to cultivation. I am disposed to regard the varieties of *Azalea indica* as being of more value than the camellias; but as they are so distinct in character and bloom at different seasons of the year, no good will result from instituting comparisons, and the only satisfactory course will be to judge them on their own merits. Azaleas may be considered one of the most valuable classes of plants for the conservatory of the amateur, for with the aid of a forcing pit and a sufficient stock of plants, they may be had in bloom from the beginning of January until the end of May. They may indeed be had in bloom before Christmas, and two of the white varieties, namely, *Fielderi* and *Narcissæflora*, bloom freely throughout Novem-

ber and December, if plants well set with flower-buds are in October placed in a genial temperature of about 60°, and syringed occasionally with tepid water. In the few remarks I am about to make, I shall say nothing in reference to the production of exhibition specimens, for to do justice to the subject, much space would be required, and I shall probably be doing better service by advising the amateur on their cultivation for the decoration of the conservatory.

Probably March is the best month of the whole year in which to purchase Azaleas, for the growth is then thoroughly firm and not likely to suffer in transmission, and, if well set with flower-buds, they will come into bloom soon afterwards, and contribute to the beauty of the conservatory. They commence to make new growth before they go out of bloom, and if purchased whilst making new growth there is a risk of its being checked to the injury of the plant.

The propagation of Azaleas by means of seed and grafting is not difficult to those who have the proper convenience, and are well acquainted with the details; but the amateur of limited experience will be prudent if he depends entirely upon the nurserymen for the increase of his stock. Thrifty plants, in five or six-inch pots, and furnished with nice heads, are perhaps the best for the amateur to purchase, as they are sufficiently strong and may usually be purchased at a comparatively cheap rate. From the time they come to hand until they go out of bloom, the only attention necessary will be to supply them according to their requirements with water. But immediately the flowers begin to fade, preparations should be made for repotting them.

In common with other delicately-rooted hard-wooded plants, Azaleas must be repotted with great care, and unless this work is done in a careful manner, the growth will be more or less unsatisfactory. Large and frequent shifts are alike undesirable, and as a rule they should be repotted annually, and at each shift pots one size larger be employed. The pots must of necessity be perfectly clean, and the importance of thorough drainage cannot be too strongly urged.

The crocks for pots of small and medium size should be broken up into pieces the size of a filbert, and these must be placed in the bottom in a regular manner. For six-inch pots the layer should be about an inch in thickness; for those eight inches in diameter, a two-inch layer will be required; and so on according to the size of the pots.

A thin layer of the rough portion of the compost should be placed immediately over the crocks, and on this about an inch of the prepared soil. The roots of plants that have been in the same pots for some time will be found to have formed a close mat, as it were, round the outside of the ball, and unless these are loosened they will not strike readily into the new soil. With a piece of bluntly-pointed stick, it will be an easy matter to loosen the roots, and the only precaution that need be taken is to avoid breaking them about unnecessarily. The crocks at the bottom of the old ball must be removed,

and in filling the space between the ball of soil and the side of the pot the soil must be rammed with a thin piece of stick, as firm as it can well be made, for if any part of the fresh soil is loose, the water will soak away without moistening the ball, and when this becomes dust-dry, it is very difficult to moisten it without standing the pot in a vessel of water. Peat is usually recommended for Azaleas; but long experience has proved to me that a mixture of equal parts peat and loam is far better than peat alone. The loam must be silky in texture and contain a fair proportion of fibrous matter, and if this is difficult to obtain, peat only should be used. In either case a sixth part of silver-sand must be added to the compost.

Azaleas are fairly hardy in constitution, and they may be maintained in the most excellent condition, with no more fire-heat than is requisite for the exclusion of frost from the structure in which they are placed. They however make a more vigorous growth when removed, after repotting, to a warm pit, where they can be kept rather close and be syringed overhead about once a day. The temperature of the pit should be about 65°, and if it exceeds that, excepting in bright weather, the growth will not be so strong as it should be.

After they have been repotted a fortnight or so, the frame must be ventilated rather freely in genial weather, and as the growth approaches completion, tilt the lights sufficiently to ensure a free circulation of air amongst the plants. If a pit cannot be spared for them, they can be placed in the greenhouse and be allowed to remain there until the growth is completed. When this stage is reached, remove them to a rather shady position out of doors, and in September place them in a light, airy position in the greenhouse. Careful watering is necessary, especially during the winter season. They require rather liberal supplies during the spring and summer, and just sufficient in the winter to maintain the soil in a moderately moist state. The soil must not at any time be allowed to become dust-dry, and if this should happen from any cause, stand the pots in a vessel of water for ten minutes or so, to afford time for the ball to become thoroughly moistened again.

In watering Azaleas, and indeed all classes of plants potted wholly or in part in peat, it is of the utmost importance to apply sufficient to soak the ball through, as indicated by the water running out of the pot at the bottom. Amateurs, in watering plants of this class often content themselves with merely filling the space on the surface once, and as this is seldom sufficient to moisten the ball more than two or three inches below the surface, the plants frequently perish in consequence.

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**A GIGANTIC GRAPE VINE.**—According to reports from San Francisco, the largest grape vine known in the whole world is growing at Montecito, near South Barbara. It is supposed to be little less than 100 years old, and the girth of the stem is 5½ feet. The foliage covers a surface of 10,000 square feet, and it is said to have borne the fabulous quantity of 6 tons of fruit annually for some years past.

## ORNAMENTAL GRASSES AND EVERLASTING FLOWERS,

BY THOMAS TRUSSLER,

Nurseryman, Edmonton, N.



EVERLASTING flowers and the inflorescence of the best of the ornamental grasses are so attractive when nicely arranged in vases, or made into rather tall bouquets, that in the smallest garden a plot of ground should be set apart for their cultivation. To grow both grasses and everlasting flowers is simple enough, and a very few words will suffice to explain the whole routine. The main points are to make a good selection, and to gather the flowers at the proper moment. When tastefully arranged and placed under a glass shade, they form an exceedingly pretty ornament for the sitting-room, or even the drawing-room, as long as may be desired, for with the protection from dust which the glass affords, they remain in excellent condition for an indefinite period. They are sometimes recommended for dinner-table decorations, but in my opinion they are not at all adapted for that purpose, and although I am extremely partial to them, I would not suggest that they be placed upon the dinner-table.

The majority of the trade catalogues contain long lists of everlasting flowers, but I have found that at least one half of them may well be dispensed with. *Acroclinium roseum*, rose, *A. album*, white, *Globe Amaranths*, in the several shades of rose, purple, white and yellow, and *Rhodanthe maculata* and *R. Manglesi*, are all exceedingly good, but to have them in perfection they must be grown in pots.

The Globe Amaranths require to be raised in heat, and grown on in much the same manner as the Cockscombs. The others may be grown in cold frames, and on warm soils tolerably well out of doors; but, speaking in a general way, pot culture is preferable. To raise the Rhodanthes sow the seed thinly in six-inch pots, and then thin down to about five plants in each, before they become weak from overcrowding. If it is intended to grow them in the open border, sow in small pots, and thin to three or four plants to each. In planting them in the border, turn out of the pots without disturbing the plants, or breaking the ball of soil. The *Acrocliniums* do best when the seed is sown in six-inch pots, and the plants are thinned to three or four. Owing to the labour incidental to the cultivation of a stock of these in pots, those kinds that can be grown entirely in the open border should be chiefly relied upon for flowers for winter bouquets.

Of the hardy kinds, *Helichrysum bracteatum* is perhaps the most useful, for it has a robust habit, and produces an immense quantity of flowers of large size. There is a strong growing form, attaining a height of upwards of two feet, and known as *Helichrysum bracteatum monstrosum*, and a dwarf form ranging between twelve and eighteen inches in height, known as *Helichrysum bracteatum*

March.



*nanum*. Each of these may be had in five different colours, namely, white, yellow, rose, red, crimson, at threepence or fourpence per packet. For ordinary purposes a packet of mixed seed of one or both of the forms will suffice. *Helipterum Sandfordi* is very pretty, the small yellow flowers being produced in clusters, and are most useful for associating with those of larger size.

*Lunaria biennis* is not an everlasting, but the white seed pods are so useful for associating with the everlastings and grasses, that it is properly included amongst them. *Waitzia corymbosa* and *W. grandiflora* are both valuable in their way, and must not be omitted. *Xeranthemum annuum*, violet purple; *X. annuum album*, white; *X. annuum imperiale plenissima*, purple, the flowers nearly two inches in diameter, and *X. annuum Tom Thumb*, a fine dwarf form, with purplish flowers are also useful.

For the hardier kinds select a border in the kitchen garden; for as the flowers must be gathered before they expand, they will not contribute much to the attractions of the flower garden if grown therein. A border in an out-of-the-way part of the pleasure ground may be devoted to them if available. When grown in the kitchen garden the best course is to sow in drills about fifteen inches apart, and to thin when the plants are about an inch high, to six or eight inches apart; the latter distance being the best for the *Helichrysums*, whilst six inches will suffice for the other things. When in the flower border the best plan will be to form a group of each, about thirty inches in diameter. They may be raised in pans and be transplanted, but the transplanting entails so much labour that it cannot be recommended.

The grasses should be sown in drills, as advised for the everlastings, but they will not require to be thinned to more than two or three inches apart, for provided there is a fair space between the rows, it is of little consequence whether plants are crowded or not in the rows. The end of March is a very suitable time for sowing the seeds of the grasses, and also of the hardy everlastings. The following are the most valuable of grasses for winter decorations:—*Agrostis nebulosa*, and *A. pulchella*, two dwarf-growing kinds of exquisite beauty, that cannot be too highly praised. *Briza maxima* and *B. media*, two pretty grasses, with very distinct inflorescence, and most valuable for winter bouquets. *Brachypodium distachyum* is useful for its distinctness; *Chloropsis Blanchardiana* has panicles in the form of a bottle brush, consisting of long silky awns; *Meliaca altissima* and *M. ciliata* have long panicles, and are very handsome. *Hordeum jubatum*, *Lagurus ovatus*, *Panicum capillare*, *Pennisetum longistylum*, *Stipa elegantissima*, *S. pennata*, and *Uniola latifolia* are all distinct and exceedingly beautiful. The grasses cost about threepence per packet, so that all the foregoing may be purchased for a very trifling sum.

With reference to the gathering and arranging the flowers, it will suffice to say that they should be gathered just as they begin to expand, and when perfectly dry. Gather with a portion of stalk, and tie them up in small bunches and hang them, flowers downwards, in a dry room. After they are thoroughly dry they can be



mounted on slender wires, in much the same manner as fresh flowers are mounted, and made up into bouquets. It is quite impossible to arrange them satisfactorily without mounting them. The inflorescence of the grasses must be cut as soon as fully developed, and before the stems begin to turn yellow, for that is an indication of their approaching maturity, and when left until ripe the seeds fall off, and the spikes are comparatively worthless. On the other hand, they must not be gathered before they have become somewhat firm, or they will shrivel, and be of little use. The flowers may be dyed of any colour, if so desired, and so also may the grasses, but as there is some difference in opinion as to whether they should be dyed or not, this matter must be left to the taste of each individual. For my own part, I prefer the natural colours of the flowers and grasses, but those who prefer brighter tints can easily dye them with Judson's Dyes, which can be procured of any chemist.

## NEW NOTES ON TOMATOES.

BY GEORGE SMITH.



**T**OMATOES have within a very brief period become immensely popular, and are now grown extensively in the gardens of the amateurs instead, as was the case only a few years back, of being confined to the gardens of the wealthy. In consequence of this popularity, a whole host of new sorts, reputed and otherwise, have been introduced to commerce. Some of these are highly meritorious, whilst others, forming the majority, have proved either inferior to the established kinds, or merely the old sorts under new names. I am afraid to say how many times our old friend the *Common Red* has been rechristened within the last four or five years. It would be of no real service to give the names under which it has been sent out, or I would do so; but for all practical purposes it will suffice to enumerate those which after careful trial have been found to combine a remarkable degree of productiveness with high quality. These are, *Keys' Early Prolific*, a variety of great value for the earliest crop, as it does not occupy much space, and ripens its fruit early; and *Hathaway's Excelsior*, which produces fruit of large size, perfectly smooth and free from ribs or corrugations, and remarkably solid. It ripens soon after the foregoing, and where there is room for a few plants only, it should be grown in preference to all others. Unquestionably, it is the most productive and finest flavoured tomato yet in cultivation. Those who are partial to yellow tomatoes should grow *Carter's Greengage*; the fruit is of medium size, round, very solid, and of the most delicious flavour. In the latter respect it is so good that it may be eaten and enjoyed by those who are very fond of tomatoes in an uncooked state. Of course, the *Common Red* may still be grown with the full assurance of successful results, but *Hathaway's Excelsior* is so vastly superior to it that it should be grown in preference.

To produce heavy crops, sow early in March, pot off singly, and when well established shift into six-inch pots, and keep near the glass. After they are well established in the larger pots, which takes but a very few days, they must be gradually hardened, and about the middle of May be planted out against a south wall. They will require protection from frost should the weather be frosty after they are planted. A friable soil, not over-rich, will be found to suit them best, for they do not require soils that have been enriched by a liberal addition of manure. Unless the soil is light and very poor, no manure whatever should be applied. They must be trained to the wall, and as each cluster of fruit is formed, stop the shoot immediately beyond it, to divert the whole vigour of the branch to the development of the cluster of fruit, and when each plant is furnished with five or six clusters, stop all the new growth as fast as it makes its appearance.

Tomatoes may be cultivated most successfully in pots. Instead of planting them out in the middle of May shift into ten or eleven-inch pots, and let them remain in the frame until the end of the month, when they should be placed at the foot of a south wall, and be allowed to root through into the border. A few branching stakes must be put round them to support the shoots, which must be stopped according to the directions given for stopping the growth of those planted out. Beyond stopping and supporting the shoots, the only attention required will be to supply them rather liberally with water. Any ordinary good soil will suit them when grown in pots, and there is no need whatever to prepare elaborate composts.

## FINE FLOWERS FROM CHEAP SEEDS.

BY WILLIAM COLE,

The Grove Vineyard, Feltham.



**T** will probably interest many of the readers of the *FLORAL WORLD*, especially those who have but little, if any, accommodation for wintering stocks of bedders, to be informed that a considerable number of the most beautiful summer flowers may be raised from seed with the same facility as mignonette. They are not all bedders, strictly speaking, but those not quite suitable for filling beds are of the utmost value for the mixed border, in which it is desirable there should be as great a variety as possible consistent with the flowers being of high quality, and produced continuously throughout the season. Some of the subjects, however, that will be enumerated are of the highest value for bedding purposes—as, for example, the petunias and verbenas, which, sown and otherwise managed in the same way as hardy annuals, produce a magnificent display of bloom throughout the summer.

We will take first of all the subjects that are in every way suitable for bedding purposes generally, and the best of these are

*Lobelia speciosa* and *Lobelia pumila*, two of the most useful plants we have for edging purposes. Sown in April, in the beds in which they are to bloom, and thinned moderately, they will commence to bloom freely in July. If required for marginal bands or divisional lines it will be an easy matter to mark out the space that will be occupied by the other subjects, and then sow the seed in shallow drills drawn exactly where the lines or bands are to be. As it is desirable to secure an even surface of bloom as early as possible, the thinning should not be commenced until the plants begin to touch each other. A few only should be drawn out at a time, and at the final thinning they should be left rather closer together than would be desirable in the case of plants raised from cuttings in the usual way. The seedlings of *pumila* should, as a matter of fact, be two inches, and those of *speciosa* be three inches apart.

*Petunias* raised from seed sown towards the end of March in the beds where they are to remain, make a wonderfully rich display from quite early in the summer until late in the autumn. Sow the seed thinly, and eventually thin to a distance of six inches apart each way. There must be no hurry in the removal of the young plants, for if they are thinned to the full distance at first, and a few are afterwards eaten by the snails, blanks will be formed in the beds.

*Verbenas* may be raised from seed in precisely the same manner as the *petunias*, excepting that the seed should be sown about the middle of March. Seedling *verbenas* commence to bloom in June, and as they possess a greater degree of vigour than plants raised from cuttings, they bloom freely until the cold weather puts a stop to the growth. Provided the *petunia* and *verbena* seeds are saved from first-class strains, the mixture of colours will be remarkably beautiful. Now it is known that beds of these flowers may be formed with no more trouble than a bed of *mignonette*, they will doubtless be grown extensively by amateurs who have no glass in preference to the common things so often seen in the gardens of this class of cultivators.

*Phlox Drummondii* and its varieties, sown in April, make beautiful beds, and continue in bloom until the end of the summer if the soil is prepared as advised for the *verbenas*. The white, purple, and scarlet are the best colours for bedding, and the best scarlet variety is that known as *Phlox Drummondii Heynholdii*. A good mixture is also very effective, and a packet of mixed seeds, costing about sixpence, will suffice for one large bed, or for two of medium size.

*African Marigolds* and *French Marigolds* comprise some of the most effective of the yellow-flowered bedders that may be raised from seed. The *African* varieties attain a height of about two feet, and the orange and yellow afford the two most effective colours. Of the *French* varieties, there is a variety under the name of *Aurea floribunda*, which is very compact in growth, and produces an abundance of large, clear, yellow flowers; its average height is twelve inches, and it is perhaps one of the very best substitutes for the *Calceolaria* we have. The *Miniature Yellow French Marigold* attains an average height of six inches, and blooms most profusely. *Tagetes signatis pumila* is of much the same character as the *marigolds*, but it has single flowers, and these are of a

bright yellow colour, and so freely produced that the plants usually become quite solid with bloom. It is now well known for its value for bedding purposes, but few cultivators are aware that plants raised from seed sown in the beds are in no way inferior to those raised in heat, excepting that they do not commence to bloom so early. The seed of the Marigolds and Tagetes should be sown in April, and the plants be thinned moderately.

The best of the plants with coloured leafage, that are well suited for bedding purposes, and can be raised from seed are, *Perilla Nan-kinensis*, one of the most useful of the free-growing dark-leaved plants, and *Pyrethrum Golden Feather*, which still remains one of the best yellow-leaved plants for edging purposes. The seed of the *Perilla* should be sown in April, and the plants thinned to six inches apart, but the *Golden Feather* should be sown at once, and the plants thinned to two inches. When required for edgings it can be sown round the margin, and the centre of the beds be filled up with other things at the usual season.

The other subjects that will be enumerated should, for various reasons, be sown in the borders, and to produce a thoroughly satisfactory effect they must be arranged with some degree of regularity. For example, at regular intervals in the front or second row there should be clumps of stocks in the back row at stated intervals, clumps of sweet peas and so forth, other things being of course sown between them. The flowers for the border comprise *Asters* in variety, the pæony-flowered being the most effective. *German* and *Pyramidal Ten-Week Stocks*, in variety; *Convolvulus Minor*; *Nasturtiums* of the *Tom Thumb* section, of which the yellow and scarlet forms are the best; *Larkspurs*, in variety; *Senecio elegans*, dwarf, free, and continuous in flowering; the purple and rose-coloured varieties are the most effective. *Saponaria calabrica* is a very pretty pink-flowered annual, and in the more northern counties it blooms continuously throughout the season; but in the neighbourhood of London and further south, it is only suitable for borders, because of the comparatively short space of time it remains in bloom. *Sweet Peas* in mixture are so effective where sown in rather large clumps along the back of the border, and are, moreover, so useful for supplying cut flowers, that they can be strongly recommended. They should be sown at once in rings about fifteen inches in diameter, and when a few inches in height, sticks four feet high put to them. To insure their flowering freely, the pods must be removed as soon as they are formed. The seeds of all the subjects mentioned in this paragraph, with the exception of the peas, will require to be sown in the second or third week in April, and the peas must be sown early in March.

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IMPORTED POTATOES IN 1875.—The declared value of potatoes imported into the United Kingdom last year was £1,071,513, against £1,035,589 in the previous year.

AN INTERNATIONAL EXHIBITION OF POTATOES will be held at the Alexandra Palace, Muswell Hill, on September 28 and 29, when prizes amounting to upwards of £100 will be offered for competition.

## CARPET BEDS OF HARDY PLANTS,

BY H. J. ANDERSON, ESQ.,

Elie Cottage, Ealing, W.



OUR capital contributions on "Rough and Ready Gardening," that appeared in the FLORAL WORLD for 1868, induced me to commence the cultivation of hardy plants, and encouraged by the numerous articles that have since appeared, I have been able to form an excellent collection of herbaceous and alpine plants. With the assistance of the advice contained in the article on the "Amateur's Sanctum" (FLORAL WORLD, page 4, 1870), I have a really grand and most interesting display of flowers and ornamental foliage throughout the year, without the trouble and expense of fire-heat, and I am well satisfied with the result.

I wish now to place on record an experiment in permanent carpet bedding with hardy plants, for probably a brief description will be of service to many amateurs who have no time or inclination to look after tender things, and who like to have their gardens highly embellished.

The beds I refer to are on a grass plot, and are eight feet in diameter. In No. 1 I have in the centre a holly, with silvery variegation. Next to this is a band of *Spiræa ulmaria variegata*, and outside of this a band of *Alyssum spinosum*. In the centre of No. 2 is an example of *Thuja aurea*, surrounded by *Lysimachia nummularia aurea*, and *Arenaria balearica*, with an outer circle of *Antennaria tomentosum*, and *Ajuga reptans fol. var.*, planted alternately. No. 3 has also a plant of *Thuja aurea* in the centre, which is surrounded by *Funkia ovata variegata*, and an outer circle of *Aubrietia purpurea variegata*, and *Lamium aureum*, planted alternately; No. 4 has in its centre a holly with golden variegation, and this is surrounded with a band of *Ajuga reptans fol. var.*, and an outer ring of *Veronica candida*, known also as *Veronica incana*. No. 5 is filled entirely with herbaceous plants. In the centre is a plant of *Hemerocallis Kwanso fol. var.*, surrounded by *Pulmonaria sibirica*, and this produces a capital effect. In this bed I plunge, during the winter, bushy plants of *Iberis corifolia* and *Thymus aureus*, and they give the bed a very fresh and pleasing appearance.

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THE COOL CONSERVATORY in the Royal Botanic Gardens, Glasnevin, has during the past month presented a most attractive appearance, by reason of the large number of Himalayan Rhododendrons that have flowered. The collection includes *Rhododendron arboreum*, *R. argenteum*, *R. barbatum*, *R. Hodgson*, *R. Falconeri*, *R. lancifolium*, and several hybrids, and as the specimens are of large size, they make a grand display when in bloom. These rhododendrons are specially suited for cultivation in cool conservatories, and as they bloom early in the year, and require very little attention beyond the needful supplies of water, they are especially adapted to the requirements of amateurs.

March.

## FALLACIES IN FRUIT CULTURE.



THE paper read by Mr. Shirley Hibberd at the Society of Arts on Wednesday, February 9th, on the "Cultivation of Hardy Fruits," was comprehensive in its scope, but was mainly directed to the reconsideration of certain points wherein the cultivator, in Mr. Hibberd's opinion, puts himself into conflict with Nature, very much to his own disadvantage. He began by saying, that during the past twenty-five years he had carefully tried and compared all the best known modes of fruit-tree management, and had but slowly, and in some cases at considerable cost, arrived at the conclusions he proposed to set before his hearers. It was a constant source of complaint that the home produce of fruit was insufficient to meet the wants of the people; but it rarely occurred to the so-called "practical" pomologists that the rules of action they prescribed, which were very clearly and definitely set forth in the books, were directly opposed to the object in view, so that fruit culture might be described as a system of preventing fruit trees bearing fruits. On such a subject so much might be said that he must endeavour hastily to direct attention to those matters which he considered of greatest importance, and especially those which had become established as subjects for erroneous teaching, tending of course to injurious practice.

To go to the root of the matter, let us look at the roots of a fruit tree. The cultivator who follows orthodox teaching will give the preference to starving stocks, a starving soil, and a starving method of management. His object will be to produce the smallest tree possible, and should it, in spite of the starving management, exhibit some degree of vigour, he will take it up and chop off the roots to throw it back into its former state of starvation. There has for years past been a run on what are called "dwarfing stocks," which, being deficient of vigour, starve the trees that are grafted on them, and the consequence is that the trees have become toys, and when one of them produces a dozen apples or pears, it is talked of as a prodigy of fertility. It is not enough, however, to starve the tree below ground by a ridiculous restriction of root action, but it is starved above ground by a similarly ridiculous restriction of leaf action, for the cultivator is encouraged to pinch back the young shoots at least three times during the summer, and if, in spite of this tormenting treatment, the tree should make a few good shoots, they are cut hard back at the winter pruning. Consider, said Mr. Hibberd, the case of a tree so treated. Its whole energies are devoted to the repair of its losses above and below ground. Every time it is cut or pinched back it makes a fresh effort to produce useful wood, and in this business is arrested by the hand of the cultivator, who professes to desire fruit, but labours might and main to render fruit impossible. It is quite true that trees so treated do produce fruit, but it is long in coming, it comes in handfuls where it should come in bushels, and it costs in labour, and land, and time fifty times its value in the market. It should be remembered that the oak is a fruit tree, and its acorns have a money value. But nobody searches after a dwarfing stock for the oak, nobody proposes to root-prune the oak, nobody above the status of a lunatic practises pruning and pinching with a view to augment the production of acorns. Then why strive and torment apple, pear, and plum trees, the fruits of which are so much more valuable, when by leaving them alone they are certain to bear sooner and more abundantly, and last the longer, and from first to last present the beautiful appearance that every tree has when the soil and climate suit it, and it suffers no mutilation at the hands of man? Every tree, no matter what its kind, tends naturally to beauty and productiveness. An oak tree produces acorns, a beech tree beech-nuts, an apple tree apples, and man can do but little to hasten or augment production beyond selecting the best sorts and planting in the best soil; and when soil and climate are known to be unfavourable, it will be prudent at the outset to consider whether it will pay to plant the tree at all.

It will be observed that many kinds of fruit trees grow with great vigour when young, and throw up clouds of long rods that perplex the amateur. Now it is particularly worthy of observation that those long rods have required the sunshine of a summer to produce them, but they are now prepared to progress towards fruit bearing, and if left alone will become studded with fruit spurs, and ultimately clothed with fruit. By cutting away these long rods you waste the sunshine of a

summer; you throw away the work of a year; you compel the tree to make another effort *ab initio* for the production of another set of long rods, instead of employing its long rods as the foundations for fruit spurs. You simply engage in a warfare with Nature, and we know full well who is likely to be beaten in such a case. But you feel you must do something with those long rods, and I advise that you delude them into the idea that they are bearing fruit. Many years ago I adopted a practice of attaching pebbles and other such handy weights by means of string to my long rods, so as to draw them gently to a horizontal position, and I found this very simple mode of procedure promoted fruit production to such an extent that the long rods became like ropes of onions. I call this "pulley-pruning," said Mr. Hibberd, and I can recommend its adoption with all the long-rod growers, such as Knight's Monarch Pear and all the rampant growing plums, for it comes nearer to Nature's method of pulling the branches down with a weight of fruit, and it checks exuberant growth without doing violence to the tree, and is much less trouble than actual mutilation.

In illustration of these remarks, attention was directed to some interesting examples in the shape of trees that had been subjected to various modes of treatment. Mr. Hibberd described a plantation of fruit trees of various kinds made six years ago, the trees selected for the purpose being the ugliest he could possibly obtain. His friend, Mr. Ware, of Tottenham, had assisted in the search for these ugly trees, little expecting that, in the course of only six years, they would prove to be equally remarkable for beauty and fertility. Three conditions, said the lecturer, were regarded in this business. He resolved that, however ugly the trees, they should be of good sorts in their several classes, grafted on free stocks, and planted with as much care as if they were the finest trees in the world. They were planted on a strong soil that would produce the finest oak and elm timber and the finest wheat in the world, and a vigorous growth has made them what they are. They have never been touched with the knife, and it is but fair to say that here and there a cross shoot might be cut out with advantage. We need not be fanatics in renouncing the use of the knife, but it is high time to restrict the liberty of those gardeners who go about hacking and slashing, and who are evidently too thick-headed to know that when they have cut a waggon-load of branches off a tree, it is scarcely possible to put them on again. But, after all, the marvel is that amateurs who may be accredited with the capability of reflecting have taken a firm hold of the idea that the smaller the tree the greater will be its productiveness, and the proper development of this faith is that fruit will most abound where there are no trees at all. Well may they adopt starving stocks, and freely use the knife to root and branch.

As a matter of course, the lecturer had to face the question of the pruning of espalier and wall-trees, and begun by saying that they were usually pruned too hard. The larger the tree, *ceteris paribus*, the better. Restriction caused a provoking production of useless spray, checked healthy root-action, and endangered the health of the tree. One great healthy peach or nectarine would produce more fruit and better fruit than a dozen trees systematically "kept within bounds," and require but a tenth of the time to take care of it that the restricted trees would demand. As to the general system of pruning wall-trees, it was sound, and we had reason to be proud of our peach walls; but there was room for improvement in the case of wall trees in bad climates, for the very best protection they could have was a bristling of breast-wood, which should be allowed them by the pruner. A fringe of short shoots projecting from the wall proved a most efficient shelter to the incipient fruit, when it happened that about May 20 there came a killing frost, and swept the crop from east walls in the case of trees pruned, according to prevailing notions, with the most perfect propriety.

We are compelled in this summary to omit many matters of interest, but we must briefly describe a model peach garden that was brought before us—an exact reproduction of one formed some years ago at Stoke Newington. We were invited to consider that the bursts of soft sunny weather that occur in February and March cause wall-trees to move prematurely, and the consequence is that having made a brilliant start the frosts that follow sweep the crop away. A late spring, and the non-occurrence of frost in the latter part of May, are the conditions on which we chiefly depend for a good fruit crop. Now, said the lecturer, if we could turn the walls round so as to keep the trees dormant during those bursts of genial weather that characterize our

March.



spring, and so often stimulate the wall-trees prematurely, we should without doubt ensure a larger and more regular production of wall fruits of all kinds. We cannot



AN EXAMPLE OF PULLY-PRUNING.

make a brick wall or a peach tree revolve on its axis, but the Reversible Fruit Wall, consisting of wood solely, secures to the cultivator the choice of two aspects for every tree, and he can therefore retard or promote their growth at pleasure, so far as



regards keeping the tree in the shade or exposing it to sunshine. This kind of wall was invented to reduce the difficulties of wall-fruit culture in a curiously unfavourable situation. It may be constructed by any village carpenter at a comparatively



THE RESULT OF FULLER'S PRUNING.

trifling cost, and might be made the basis of a most enjoyable amateur's peach garden. The requisites are stout, square posts, cleft at top to receive wooden walls suspended by cleats. Between the posts are wires, on which the trees are trained.

March.

As the walls can be hung on either side of the tree, it follows that where such walls are in use the cultivator has in every case the choice of two aspects. In the particular case under consideration, the walls were eight feet in length and six feet high from the ground line. They were constructed by Mr. John Overall, of 16, Shacklewell Lane, Kingsland; but as the invention is not patented and the construction demands no special skill, any village carpenter could do the work at a cost quite trifling compared with the cost of brick walls.

## THE GARDEN GUIDE FOR MARCH.

I will not praise the often-flattered rose,  
 Or, virgin-like, with blushing charms half seen,  
 Or when, in dazzling splendour, like a queen,  
 All her magnificence of state she shows;  
 No, nor that nun-like lily which but blows  
 Beneath the valley's cool and shady screen;  
 Nor yet the sun-flower that, with warrior mien,  
 Still eyes the orb of glory where it glows;  
 But thou, neglected wall-flower, to my breast  
 And muse art dearest, wildest, sweetest flower!  
 To whom alone the privilege is given  
 Proudly to root thyself above the rest,  
 As Genius does, and, from thy rocky tower,  
 Lend fragrance to the purest breath of heaven.

DOUBLE-DAISY.

### THE FLOWER GARDEN,

The principal of garden plants that will bloom in the course of the month are the Marsh Marigold, *Caltha palustris*, fl. pl.; Winter Snow-flake, *Lenoium vernum*; Star of Bethlehem, *Ornithogalum arabicum*; Crocuses, Snowdrops, Forget-me-nots, Polyanthes, Aubrietias, Fritillarias, and Squills. Herbaceous plants ought to have attention this month; the borders should have a slight dressing of thoroughly decayed manure, and be carefully pricked over with a fork. Plants required to be increased may now be taken up and divided, and replanted. Pinks, Picotees, Carnations, Pansies, Hollyhocks, Phlox, and Pentstemons that have been preserved in cold frames during the winter, should be planted in their respective quarters about the middle or end of the month. All kinds of half-hardy and hardy annuals for summer flowering must be sown as early this month as the state of ground will permit. In wet, cold soils the sowing must be deferred until next month, as the seeds run a risk of perishing thus early; mark the places where they are sown, and thin out immediately the plants are large enough to handle. Roses should be pruned about the third or fourth week of this month; if done earlier a risk is run of having the first bloom injured, and probably destroyed.

### KITCHEN GARDEN.

This is a most important season in this department, for the kitchen supplies are ruled throughout the whole year by the way the operations are conducted now. Continue to turn up every quarter directly it becomes vacant. In light warm soils get in the main crops of potatoes towards the end of the month. In cold damp soils, the middle of next month will be preferable. Sow and make new beds of asparagus. Sow for main crops Borecole, Brussels Sprouts, Cabbage, Cardoons, Carrots, Cauliflowers, Chervil, Leeks, Lettuce, Onions, Parsley, Parsnips, Peas, Radishes, Savoys, Scorzonera, Spinach, and Turnips. Plant Globe and Jerusalem Artichokes; clear the former of dead leaves and protecting material. Make fresh plantations of horseradish, rhubarb, and shalots, if not already done. Pot-herbs may now be sown and propagated by divisions, offsets and slips, and fresh beds planted. The soil should be in a dry workable condition when the various crops are sown and planted; it is better to wait a few days than to tread upon the ground when pasty.

### FRUIT GARDEN.

Pruning and training must be completed, and grafting commenced. Cuttings of gooseberries and currants may still be put in with every reasonable chance of

success. Burn all the prunings of trees and the clippings of hedges, for they only litter up the place, and the ashes are valuable for spreading over the onion-beds. Raspberry quarters must not be dug over in the same way as those devoted to other bush fruits, but must have a good mulch instead. Wall-trees coming into bloom must be protected. Nets, tiffany, or fir branches can be used for protecting purposes; the first two are the best.

#### GREENHOUSE AND CONSERVATORY.

It is now a trying time to the occupants of this structure, for the outbursts of bright sunshine are so generally accompanied with cold, keen, drying winds, that it is impossible to ventilate freely enough to keep the temperature right. Shading must be resorted to, or the plants in flower will soon lose their freshness and beauty. Air, however, must be freely admitted when the weather will admit of its being done, as nearly the whole of the hard-wooded plants will now be making their growth, and unless they have plenty of air the young wood will want that firmness which is so essential to an abundance of bloom. Soft-wooded heaths and epacris should be cut down soon after they go out of flower; they have then plenty of time to make new wood, and get it matured before autumn. Camellias growing out of shape should be pruned, and placed in a nice genial growing atmosphere, and well syringed with tepid water to induce them to break well. Pelargoniums of all kinds that need a shift must have it at once, or not at all. Shift all plants that need it as fast as they go out of flower. Plants coming from the frames should have a smoking before they are brought into the greenhouse, as there are many plants now in bloom, and flowers of all kinds receive considerable injury from tobacco smoke. Plants brought from the forcing-houses in bloom should have the advantage of a close, warm, shady corner until they are inured to the greenhouse temperature. Fuchsias should be shaken out, root pruned, and repotted; cuttings put in last month will now be nicely rooted, and ready for potting off. Sow Balsams, Cockscombs, Phlox Drummondii, and other annuals for summer decoration. Plant off early-sown plants.

#### STOVE.

Shading will be required during outbursts of brilliant sunshine, for it will be found quite impossible to give sufficient air to keep the temperature down to its proper level without injuring the plants. Set to work another batch of Achimenes and Gloxinias; shift on those started early. Repot Begonias, Gloriosas, Luculias, Rondoletias, and Ixoras that have been cut back. Those that are about to flower must be left alone until their beauty is past. Start Clerodendrons, Stephanotis, Cissus, Dipladenias, etc.; all will start quicker and stronger if the pots are partly plunged, or set upon a gentle bottom-heat. Ferns will soon be starting into growth; those requiring a shift must have it at once. Where the plants are already in large pots, and it is not considered desirable to increase the size, reduce the ball two or three inches all round, and cut a piece off the bottom, and repot in the same size again; keep close and shady for a week or so after doing this.

#### VINERY.

Vines in flower must have rather a drier atmosphere, and not so parching as is generally advised. Disbud, train, and thin out the bunches as required. After the fruit is set keep a thoroughly moist atmosphere, and paint the pipes with sulphur to prevent red spider making its appearance. Slightly increase the temperature, and stop one or two eyes beyond the bunch.

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RENDLE'S PATENT SYSTEM OF GLAZING is well represented in the beautiful curvilinear roof of the Westminster Aquarium. Only flat glass was used, and the total weight employed was 50 tons, the measurement being 60,000 square feet. There were only two skilled workmen and four labourers employed to fix the glass, and the work was accomplished within a space of ten weeks, without the use of a particle of putty or cement, and the cost, per definite measure, was less than half the cost of glazing the Crystal Palace.

March.



## INGER-POST FOR PURCHASERS OF PLANTS, FLOWERS, SEEDS, ETC.

### CHRYSANTHEMUMS FOR 1876.

(*Best in each Class for Small Collections  
marked thus \*.*)

#### FORTY INCURVED VARIETIES FOR EXHIBITION BLOOMS.

Alfred Salter\*, Beethoven, Beverley\*, Blonde Beauty, Bronze Jardin des Plantes\*, Doctor Brock, Empress of India, Fingal\*, Florence Nightingale, General Bainbrigge\*, General Slade, George Glenny\*, Gloria Mundi, Golden Beverley, Golden Dr. Brock\*, Golden John Salter, Guernsey Nugget, Her Majesty\*, Isabella Bott, Jardin des Plantes\*, John Salter, Lady Hardinge\*, Lady Slade, Le Grand, Lord Derby\*, Miss Mary Morgsn\*, Mrs. G. Rundle\*, Mr. Brunlees, Mr. Evans, Pink Pearl, Prince Alfred\*, Prince of Wales, Princess Beatrice, Princess of Wales, Princess of Teck, Queen of England, White Globe, White Venus, Yellow Perfection.

#### THIRTY INCURVED AND REFLEXED VARIETIES FOR SPECIMEN PLANTS AND CONSERVATORY DECORATION.

Alma, Annie Salter\*, Aurea multiflora, Cardinal Wiseman, Carissima, Christine\*, Chevalier Damage, Countess of Granville\*, Dr. Sharp\*, Fingal\*, General Bainbrigge, Gloria Mundi\*, Golden Clustre, Golden George Glenny, Her Majesty, Rival Little Harry, Lord Clyde, Lord Ranelagh\*, Julie Lagravère\*, Le Grand, Mrs. George Rundle\*, Mrs. Forsyth, Prince Alfred, Prince of Wales\*, Progne, Sparkler, Vesto\*, Virgin Queen, White Christine\*, White Venus\*.

#### FIFTEEN LARGE ANEMONE FLOWERED VARIETIES FOR EXHIBITION BLOOMS.

Antonius, Empress, Fleur de Marie, Georges Sand, Gluck, King of Anemones, Lady Margaret, Louis Bonamy, Marguerite d'Anjou, Mrs. Pethers, Prince of Anemones, Princess Marguerite, Queen Marguerite, Rose Marguerite, Sunflower.

#### THIRTY POMFONES FOR EXHIBITION SPECIMENS AND CONSERVATORY DECORATION.

Agatha, Aigle d'Or, Amy\*, Andromeda, Aurore Boréale, Bob\*, Cedo Nulli, Fanny, Florence, General Canrobert, Golden Aurore\*, Hélène\*, Innocence, Little Beauty\*, Madame Eugène Damage\*, Lucrèce, Madlle. Marthe\*, Maroon Model, Miranda, Miss Julia, Mrs. Dix, Mrs. Turner, Président Decaisne\*, Prince Kenna, Rose d'Amour, Rose Trevenna\*, St. Michael, Salamon, Stella, White Trevenna\*.

#### EIGHTEEN JAPANESE FOR EXHIBITION AND CONSERVATORY DECORATION.

Asteroid\*, Bismarck, Cromatella\*, Cry Kwang, Dr. Masters, Elaine\*, Fair Maid of Guernsey\*, Garnet\*, Grandiflora\*, James Salter\*, Madame Godillot\*, Nagasaki Violet, Prince Satsuma\*, Red Dragon\*, The Daimio\*, The Mikado, The Sultan\*, Wizard.

#### BEST FIFTY SHOW DAHLIAS.

(*Arranged according to their Colours.*)

**LIGHT.**—Herbert Turner, Nelly, Emily Williams, Mrs. Harris, Julia Wyatt, Queen of Beauties, Annie Neville, Miss Henshaw, Peri, Lady G. Herbert, Harriett Tetterell, Flag of Truce, Marchioness of Bath, Maid of Essex.

**YELLOW AND ORANGE.**—Acme of Perfection, Arbitrator, Cremorne, Prince Arthur, King of Primroses, James Hunter, Samuel Naylor, John Dunnington, Leah, Vice-President, Royalty, Toison d'Or, John Neville Keynes, Lothair, William Lucas, William Keynes.

**CRIMSON AND RED.**—Thomas Goodwin, James Service, Henry Walton, Lord Palmerston, Sir Greville Smythe, Charles Backhouse, James Cocker, Earl of Radnor, John Standish.

**PURPLE AND MAROON.**—Countess of Pembroke, Ovid, Indian Chief, Queen's Messenger, Alexander Cramond, Willie Eckford.

**LILAC AND ROSE.**—Memorial, Juno, Lilac Queen, Criterion, Mrs. Boston, William Pringle Laird.

#### BEST THIRTY SHOW DAHLIAS.

*(Arranged according to their Colours.)*

**STRIPED AND SPOTTED.**—Miss Lillie Large, Rev. J. B. Camm, Carnation, Mdle. Nilsson, Attraction, Octoroon, Ebor, John Salter, John Bunn, Remarkable, Butterfly, Flora Wyatt, Flossie Williams, Grand Sultan, Leopardess, Viceroy, Marquis of Lorne, Parrot.

**TIPPEN.**—Beauty of Wills, Laura Haslam, Lady Paxton, Pauline, Pluto, Queen Mab, Prospero, Fanny Sturt, Le Dominie Noir, Gem of the Grove, Mrs. Saunders, Mrs. Bennett, Monarch.

#### BEST TWENTY-FIVE BOUQUET OR POMPONE DAHLIAS.

Annie, Little Dear, Little Nigger, Tom, Rover, Bessie, Fairy Child, Little Dorrit, Fireball, Guiding Star, Sacramento, Burning Coal, Dr. Webb, Northern Light, Pet of the Village, German Daisy, Sunshine, Pretty Gem, Conqueror, Little Wag, Little Willie, Nemesis, Golden Canary, Perfection of Lilliputs, Voltaire.

### NEW BOOKS.

**SKETCHES OF BRITISH INSECTS.** By Rev. W. HOUGHTON (Groombridge).—This is a very valuable addition to the elegant handy books Messrs. Groombridge have for some years past been producing, and which now constitute quite an unique library of natural history, specially adapted for young people, but useful and perhaps delightful to people of all ages. The volume before us by Mr. Houghton is characterized by the author as "a handbook for beginners in the study of entomology," and a very comprehensive, entertaining, and trustworthy handbook it will prove, whether to be carried in the pocket afield, or referred to in connection with the stocking and arranging the insect cabinet at home. All the orders of British insects are treated of, and the plates, which are charmingly finished in colour, comprise figures of no fewer than fifty-nine species, amongst which, as a matter of course, butterflies, moths, and beetles are conspicuous. How this is done for 3s. 6d. is a mystery, but it is a fact.

**DOMESTIC FLORICULTURE.** By F. W. BURBIDGE (Blackwood).—This pretty and useful work was introduced to our readers on its first appearance, as worthy of their confidence, and it has attained to a second edition so quickly that there remains no question of its enjoying the confidence of the world at large. The present edition contains some additions, and is rather more nicely turned out than the first, though there was no fault to be found with that. We can but beg such of our friends as need a handy and not over elaborate work on the management of small greenhouses, window gardens, and the preparation of floral devices and embellishments, to add to their happiness at once, by ordering this handsome work by Mr. Burbidge.

**HANDY BOOK OF THE FLOWER GARDEN.** By DAVID THOMSON (Blackwood).—This is the third edition of one of the best books of its class. It has and always had the faults common to books written by big gardeners for little people—that of shooting over their heads in some things, as, for example, in the lists, which are mostly too large for the size of the book. But it is so sound, so explicit, so full, so nicely toned, that we feel uncomfortable in finding fault, and make an end of the matter by heartily recommending it. The amateur gardener will find it invaluable, and it will constitute a capital cheap present to a young gardener who does not as yet profess to know everything.

**BUSINESS.** By JAMES PLATT (Simpkin).—This is a noble treatise on the philosophy of money-making, and the moralities of trade. It is short enough to serve as a sermon for a business man who is open to good impressions, and would like to

hear the criticism of a good and thoughtful man on the place that trade and commerce should have amongst the humanities. We strongly recommend that it be placed on the table wherever young men are likely to be on the look-out for something in the way of sound literature.

OUT AND ABOUT. By HAIN FRISWELL (Groombridge).—Mr. Friswell's bright narrative of a boy's adventures, with its happy sketches, arctic scenery, and prairie dangers, comes before us once more in a quite new dress, and seems as fresh in tone as if we now saw it for the first time. There are so few who can write a good boy's book, though many try, that we must make the very most of such as meet the requirements of the case, both to keep trashy books out of the hands of boys, and to accustom them to the flavour of healthy literature. But we talk of boys too exclusively, for "Out and About" will suit the girls as well as the boys, and we have just heard a damsel of sweet fifteen declare with emphasis that it is a "jolly book."

## HORTICULTURAL AFFAIRS.



ROYAL HORTICULTURAL SOCIETY.—The annual meeting of the society was held at South Kensington, on February 10, Lord Aberdare, President of the Society, in the chair. In the report presented to the meeting, the Council refer to the necessity for increasing the income of the society, and express their regret that they should have had to revise the privileges of the Fellows, for the purpose of augmenting the income. An attempt was made on the part of some of the local Fellows to remove the Council, but in this they were defeated by a large majority, and the report was then adopted. Towards the close of the meeting, a committee of Fellows resident in Kensington was, on the suggestion of the President, formed to consult with the Council in reference to the privileges of the four guinea Fellows.

THE ROYAL HORTICULTURAL SOCIETY'S exhibitions for the current year are four in number, and these are fixed for March 15, June 7 and 8, July 19 and 20, and November 8. The exhibition announced for May 3 has been superseded.

THE ROYAL AQUARIUM SOCIETY'S exhibitions at Westminster, of plants, fruits, flowers, and vegetables, to be held in the course of the year, will constitute the most important series of exhibitions that will for the present engage the attention of horticulturists, for the dates have been fixed with judgment, the schedule for each show is sufficiently comprehensive, and the prizes are throughout exceedingly liberal, and in some instances extravagantly so. The dates of the exhibition are as follows—April 12 and 13, May 10 and 11, May 30 and 31, July 5 and 6, October 4 and 5.

STIPA PENNATA, regarded as a somewhat rare ornamental grass in English gardens, grows abundantly in the plains of Hungary, and is there collected and dried for those winter bouquets of grasses and everlastings which appear in our markets towards Christmas.

THE FLOWERS USED IN PERFUMING TEA, according to the Chinese *Materia Medica*, are chiefly those of *Aglaia odorata*, *Gardenia radicans*, *Camellia sasanque*, *Jasminum sambac*, *Olea fragrans*, and *Ternströmia japonica*, the flowers of the *Olea* being the most extensively employed for the purpose. The leaves of *Salix alba* are employed rather extensively where they have been properly prepared for mixing with the common kinds of tea intended for exportation.

THE BARTRAM PLANT PROTECTOR AND POT DRAINER is an ingenious contrivance, introduced by Messrs. Dick Radclyffe and Co., for the exclusion of worms from flower-pots. It consists of a square piece of perforated zinc, to be placed over the hole in the bottom of the pot before the crocks are placed in it. It in no way interferes with the ready escape of the superfluous moisture, but most effectually prevents the worms entering the pots.

QUERCUS ANDERSONI, a new species of oak from the Sikkim Himalaya, was the subject of a paper by Dr. G. King at the last meeting of the Linnæan Society. It is the "Katoos" of the Nepaulese, and one of the very finest of Indian forest trees. It is closely related to *Q. spicata*, but is met with at higher altitudes.

BRUSSELS INTERNATIONAL EXHIBITION.—This, the hundredth exhibition of the Brussels Society of Flora, is likely to prove a brilliant affair. The exhibition will open on the 30th of April, and the Botanical Congress to be held in connection

with it will commence on the 1st of May. The secretary of the exhibition is M. Lubbers, Jardin Botanique, Brussels; the secretary to the congress is Professor E. Morren, Liège.

**CLIANTHUS DAMPIERI**, Deutsch Flagge or German Flag, was, says the *Hamburger Gartenzeitung*, raised by L. Vieweg, of Wegleben, near Quedlinburg, from seed; and he has now, after three years' trial, found it to be constant from seed. Instead of the scarlet with a black centre of the typical *C. Dampieri*, this variety represents the German national colours—black, white, and red. The upper part of the flower is of a fiery scarlet, the centre is a glossy, deep, bluish-black, and the keel is pure white, with a sharply-defined red margin on the lower side. The separate flowers measure  $3\frac{1}{2}$  inches and upwards in length, and are borne in clusters of four to seven together. In habit it agrees exactly with the ordinary *C. Dampieri*, and it is an exceedingly free bloomer. Treated as an annual it is most effective.

**THE PURPLE-LEAVED PEACH** is well figured in *Illustration Horticole*, t. 224. The leaves are less purple when the fruit is ripe than in the spring and early summer, when the growth is as yet immature; but as here represented they are still distinctly coloured a fine bronzy purple on the under side, and purplish green above. The fruit is of medium size, spherical, with distinct suture, the colour delicate rosy carmine, with shades and patches of yellowish buff.

**LIFE HISTORY OF THE POTATO FUNGUS.**—At the last monthly council meeting of the Royal Agricultural Society of England, Mr. Whitehead, Chairman of the Botanical Committee, reported that the report of Professor De Bary had been received, and will be published in the next number of the Society's *Journal*. This is described as a most valuable and exhaustive report, giving a complete history of the Potato Fungus and of its allies, with a critical examination of the observations and opinions of Mr. Worthington G. Smith. The series of experiments which has been carried on during the last two years by Professor De Bary at the instigation of the Society are fully recorded, with their bearings on the cultivation of the potato. The result of his experiments and observations establishes that the disease persists in a dormant state during the winter in the potato tubers; and that the spores for the propagation of the disease have been produced by the mycelium growing in the potato plants produced from such tubers.

**LEMONS AND CITRONS.**—The Greek island of Andros, it is said, produces from 10,000,000 to 15,000,000 lemons annually. They are chiefly exported to Constantinople, the Black Sea, and the Danube, realizing the average price of from £1 to £1 3s. per thousand. Large quantities of citrons also are produced in the Island of Naxos, and exported to England, Austria, and Turkey. In Zea quantities of Valonia are produced; the quantity exported to England, Austria, Italy, Turkey, and Russia amounting to near upon 2000 tons—the average price obtained being from £17 to £21 per ton.

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## TO CORRESPONDENTS.

**PROPAGATING CASE.**—*J. R. N., Kingston.*—The idea of the case is exceedingly good, but your design requires a few modifications, to insure its working in a thoroughly satisfactory manner. The case should be made of strong tin, and have a double bottom, to form a space for holding two inches of water. A water jacket round the sides and ends is quite unnecessary, as the warmth derived from the water in the space formed by the double bottom will be quite sufficient. A pipe about eight or ten inches in length, and inserted near one of the corners at the back, must be provided for filling the tank, boiler, water space, or whatever it may be designated, whenever required, and for emptying it a small tap must be fixed on the under side for drawing off the water. One of the small atmospheric burners will answer admirably for heating the water, and it will be found that very little gas will be required for maintaining the requisite degree of warmth. The case can stand upon the legs, as you propose, and when fitted with a tank, according to the directions here given, it will have the appearance of the case shown in the sketch accompanying your letter. The back should be three inches higher than the front, and as a covering for maintaining a close atmosphere about the cuttings, we would advise you to have a neat frame glazed with sheet glass. Two or three of those squares of glass would do, but there is a risk of their cutting the hands, and also of

March.



their being broken. The material in which the pots are plunged must be maintained in a moderately moist state, otherwise the heat will not rise freely. When filled with plants the cover can be taken away altogether; without a cover it will be of very little service for striking cuttings. We have had no experience with the stove referred to, and cannot, therefore, say whether it will be sufficiently powerful for keeping the frost out of the house or not. Stoves made on the same principle may be placed in houses filled with plants without any injury to the plants, provided the wick is properly trimmed. As the house has simply a glass roof, one of the largest-sized stoves would probably answer very well. *Lapageria rosea* is suitable for the wall, so also is *Ficus repens*, a free-growing plant, which in its growth very closely resembles one of the small-leaved ivies, for it has deep green leaves, spreads rapidly, and the shoots adhere firmly to the wall.

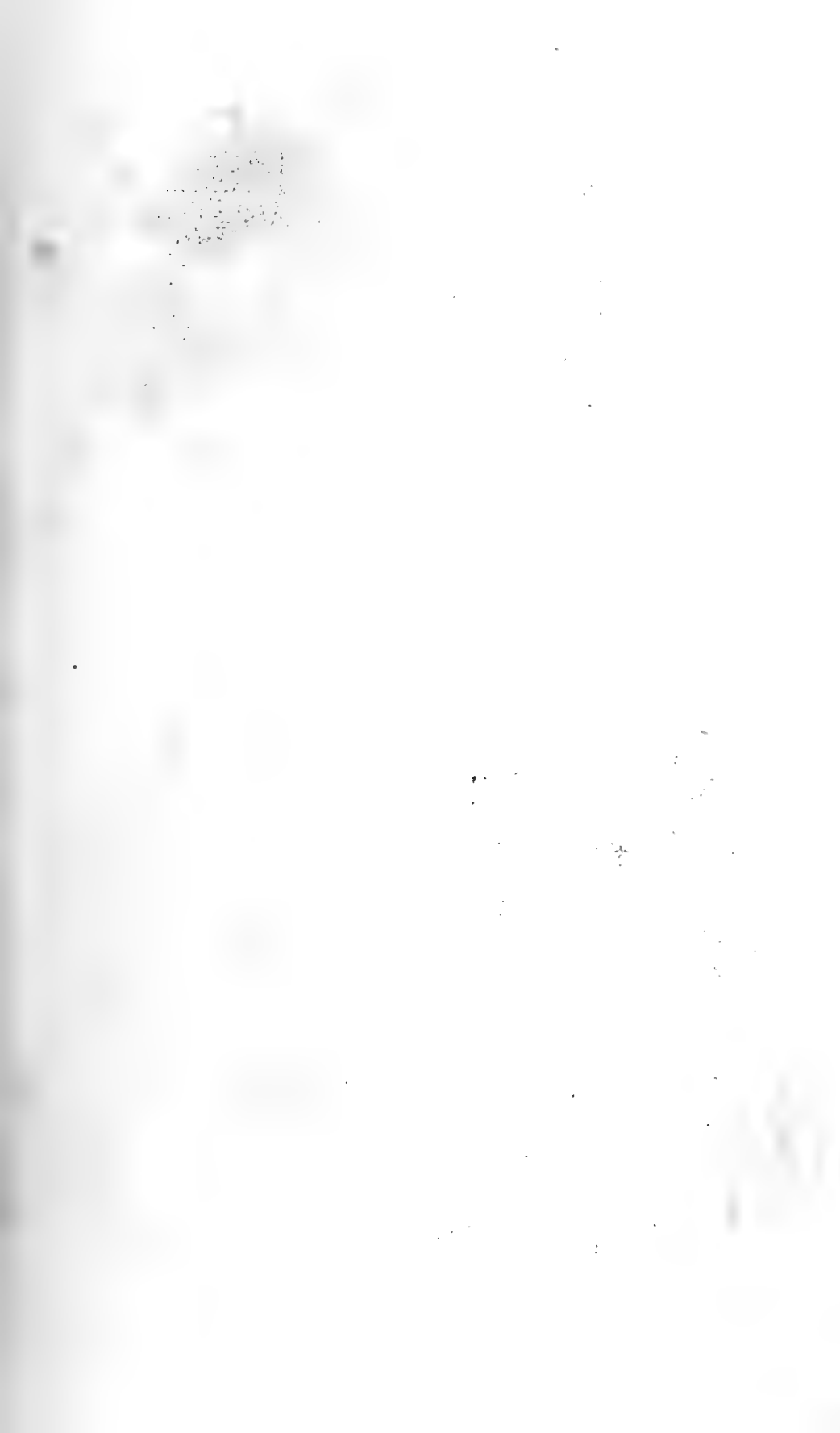
*D. H. T.*—The berry-bearing plant, of which you sent a small spray, is *Calli-carpa purpurea*.

PROPAGATING HOYA CARNOSA.—*A Constant Reader*.—This pretty greenhouse climber may be readily propagated by means of cuttings of young wood that has become moderately ripened. If to secure a firm base it is necessary to take the shoots off eighteen inches or so below the end, they may be shortened to a length of six inches by the removal of the soft points. Amateurs not experienced in striking cuttings may readily propagate a few plants by layering. Select healthy shoots, and about two feet from the end peg a portion of the stem down to pots filled with light sandy compost, and cover two or three inches of it with half an inch or so of the same soil. Roots will soon be emitted from the stem, and in a comparatively short time they will be rooted sufficiently to be separated from the parent. It is not necessary to cut the stem in any way at the point where it is buried in the soil, for provided it is firm, it will be found to root freely without being wounded. Cuttings may be taken, and shoots layered at any time from the present moment until September next.

MARVEL OF PERU.—*Amateur*.—The varieties of the Marvel of Peru are capable of making a grand display in the mixed border throughout the summer. They require a soil sufficiently rich to promote a vigorous growth, and when this is provided them they grow freely and bloom continuously without any attention beyond putting a moderately stout stake to the main stem of each, to prevent the wind breaking them off. Plants raised from seed sown early, and pushed on with the aid of a high temperature, will bloom the same season; but the course we would advise you to take is to purchase a stock of roots, which are very cheap, and in April plant them in the border where it is intended they should flower. In the autumn the roots can be lifted and stored in sand, where they will be safe from frost, and in the spring be replanted. Very few people have a just conception of the extreme beauty of these old-fashioned flowers, or they would be grown much more generally than is at present the case. Seed sown in April in a nursery-bed will yield a supply of roots for planting in the spring following. The seed is very cheap, either in mixture or in collections.

SPLENDID PRIMULAS.—*R. H.* says: A short time since I had the pleasure of seeing some of the finest Chinese Primulas probably ever grown, and as perhaps some of the readers of the FLORAL WORLD will be interested in a brief notice of them, I hope you will be able to spare me a little space to refer to them. My object in directing attention to these examples is simply to show what a grand effect these flowers are capable of producing when grown in really first-class style. The primulas were in the conservatory, in the gardens attached to Eighton Cottage, near Gateshead, the residence of J. M. Favel, Esq., and they were alike remarkable for the size of the plants, the profusion of bloom, and the size and rich colour of the flowers. Instead of the individual bloom being partly hidden in the foliage, as is often the case, the flowers were quite clear of the leaves, and arranged in massive spikes to a height ranging from six to eight inches above the surface of the foliage. In many instances the spikes bore a closer resemblance to those of *Primula japonica* than to those of *Primula sinensis*, as commonly met with. The flowers averaged two inches in diameter, very stout in substance, and were in every way of the finest quality. It was, in fact, one of the finest strains I have seen; and I may add in conclusion, that for some years past the gardener has saved the seed from carefully selected plants only, and by this means has been able to secure flowers of the finest quality.







## NEW GLOXINIAS.

(With Coloured Illustration of Varieties introduced by Mr. B. S. Williams.)



THE group of Gloxinias represented in the accompanying plate fairly represent a few of the series of new varieties now in course of distribution by Mr. B. S. Williams, of Victoria and Paradise Nurseries, Holloway. We say "fairly," because to represent such flowers in a coloured plate perfectly is not within the power of man, and we are limited not only by the conditions common to representations of flowers in a general way, but also by the conditions of our publication, the low price of which allows but a small margin for the work of the artist. Nevertheless, to the cultivator of Gloxinias, our figures will be useful as indicating the high quality of form and colour that has been attained in this extremely useful race of flowers, and the desirability of securing such superb representatives of this interesting family. During the past four or five years, new Gloxinias have appeared in considerable numbers in various quarters; but we have seen none to equal the set Mr. Williams has now brought before the public, having already submitted them to the severe tests of exhibition and comparison with the best varieties extant. We have made notes of six superb varieties in this series. They are *Crown Prince*, erect, brilliant cherry red, with ivory white margin; *Avalanche*, pure white; *Fascination*, erect, deep lavender purple, with white margin; *Masterpiece*, drooping, rich lake tinted crimson self; *Crown Princess*, erect, a lovely oculate flower, the throat white, encircled with rich red, regularly divided by blotches of pink, the margin white; *Mauve Queen*, drooping, deep puce purple. For exhibition purposes these must very soon displace varieties of similar colours that have hitherto taken the lead.

## CULTIVATION OF GLOXINIAS.

BY GEORGE GORDON.



GLOXINIAS, although requiring the temperature of the plant stove at certain stages of growth, are so exceedingly beautiful when in bloom, and may be cultivated with so little trouble, that they can be recommended to amateurs who are fortunate in the possession of a conservatory or greenhouse, as being eminently worthy of their attention. To cultivate them successfully, they must have, from the time they are started into growth until they commence to produce their exquisitely beautiful flowers, the assistance of a temperature between 60° and 70°; but to afford them this it does not necessarily follow that they must be placed in a plant stove. As a matter of fact, they may be grown with the highest degree of success in a

frame or pit devoted to melons or cucumbers. The cultural details are fortunately simple, and amateurs with no special knowledge may, with the assistance of a few hints, produce specimens of remarkable excellence.

There are not, it may be interesting to observe, many older stove plants in cultivation than these, for the first species, namely *Gloxinia maculata*, was introduced to this country in 1739, or a few years only after the erection of the first glass plant house. It was long considered one of the most beautiful of the stove plants in cultivation, and it was not until seventy-six years after its introduction, that a second species made its appearance in collections, for *G. speciosa*, the second species known to science, was not introduced to cultivation till 1815. Shortly afterwards several others were introduced, and amongst these were *G. caulescens*, *G. digitiflora*, *G. discolor*, and *G. tubiflora*. All these had drooping flowers, and it was not until 1845 that the first gloxinia made its appearance with erect flowers, namely *G. Fyffiana*. This was raised by Mr. John Fyfe, gardener at Rothesay, Buteshire, and from its distinctiveness and beauty it attracted much attention at the time, and gave a great impetus to the raising of hybrids. No record of its parentage has been preserved, but it is supposed to have been raised from seed saved from *G. maxima*, an old species with white flowers, the throat painted with violet. Practically speaking, this is of no consequence, for it has long since been replaced by other erect-flowering hybrids of far greater beauty. Since the flowering of the Fyffiana, in 1845, a very large number of hybrid gloxinias have been raised and distributed in the ordinary course of trade, and the specific forms have disappeared to make room for their more attractive descendants. The improvement has throughout been steady, and it is worthy of note that a period of over thirty years has been necessary to bring these flowers to the state of perfection as represented in the magnificent varieties recently raised in the nurseries of Mr. B. S. Williams, at Upper Holloway, and figured in the present number of the FLORAL WORLD. The flowers of the species mentioned above were described by writers in the early part of the present century as of large size and of great beauty; but how small and insignificant they appear in comparison with those of the present day. I have derived considerable interest from a comparison of the coloured illustrations of gloxinias in the *Florists' Journal* for November, 1842, with the illustration of Mr. Williams's hybrids, for the difference in the size and quality of the two series of flowers is simply wonderful, they differ so much in size that it would be possible to place two or three of the blooms of the older kinds within a single flower of one of the new hybrids; and in perfection of form, stoutness of texture, and richness of colour, the flowers of the latter are so far superior that at first sight they appear to belong to a quite distinct class of plants.

We now come to the question of cultivation, and in a brief allusion to the principal cultural details, matters will be very much simplified by its being at once stated that gloxinias have comparatively large tubers or corms, from which in the course of the season

the foliage and flowers rise ; and that in the autumn they require to be dried off and stored in a suitable place, where they will be safe from frost. In purchasing at this season of the year, thrifty plants just starting into a free growth should be selected, as they may be depended upon for producing a good display of bloom in the course of the summer. They will necessarily be in small pots, and the proper course to take when they come to hand will be to place them in a pit or house where they will enjoy a temperature of or about 65°, with a moderate degree of atmospheric humidity. A better place than a cucumber or melon bed could not well be had for them, as the heat and moisture necessary in the production of good crops of cucumbers and melons are alike conducive to the health of the gloxinias.

Until the roots begin to run freely and vigorously round the outside of the ball of soil, they must remain in the pots in which they were received, and be supplied moderately with water, and be syringed overhead occasionally. It must be understood that remaining in the small pots until pot-bound will be hurtful, and also that as soon as the roots begin to form a close net-work round the ball they should be shifted into six-inch pots. The species from which the present race of hybrids have been raised were mostly found luxuriating in soil consisting largely of decayed leaf-mould, and in shady situations. It has not, however, been found in practice desirable to employ a compost so light as that in which they grow with great vigour in their native habitats, and a mixture consisting of two parts each of turfy loam and leaf-mould, and a part each of well-decayed manure and leaf-mould has been found far more suitable. Indeed, judging from the splendid growth the plants make, and the profusion in which the flowers are produced, when a compost prepared as here advised is employed, it is fair to conclude that a better preparation could not well be had.

If convenient, place them in the frame again after repotting, and allow them to remain for a fortnight or so. At the end of this time they will have become nicely established, and may with advantage be removed to cooler quarters. When in a high temperature and a humid atmosphere they grow with tremendous vigour, but plants produced under these conditions are not the best that could be had for the embellishment of the conservatory. They are too tender to bear the conservatory temperature without receiving more or less of a check, and the leaf and flower stalks are too long for the plants to have a neat appearance. A temperature of 70° is the most suitable for them until they are coming into bloom, when it may be a few degrees lower, and by the time they are established in the pots in which they are to bloom, very little artificial heat will suffice to maintain the requisite degree of warmth. They must have rather liberal supplies of water, and should also enjoy a moderate degree of humidity, with a skiff overhead from the syringe on the afternoon of fine bright days. A moderate degree of shading is necessary from the first, but growing them in a dense shade, as is done in many gardens, is objectionable, for the simple reason that the plants are of but little service in the conservatory. They may be removed to

the last-mentioned structure when coming nicely into bloom, and they will continue to produce their flowers for a considerable period if placed where they will not be exposed to draughts or brilliant sunshine.

To propagate gloxinias is easy enough, both from seed and by means of the leaves. Seed saved from a first-class strain, such as that represented by Mr. Williams's hybrids, is not very expensive, and an ordinary packet will yield a considerable number of very beautiful varieties. The seed is very small, and must be carefully sown in pots filled with a mixture of peat, leaf-mould, and sand, the whole well mixed, and the surface made perfectly level. Cover the seed very lightly, and place the seed pots in a close warm position, to encourage the rapid germination of the seeds. As the seedlings make their appearance over the surface, remove to a lighter position, to promote a sturdy growth, but they must not be fully exposed to the sunshine. In due course prick them off into pans, putting them about an inch apart, and when they have grown sufficiently to touch each other, pot them off separately. With ordinary good management, the seedlings will have, by the end of the season, become large enough to produce a splendid display of flowers the following summer.

In propagating a stock by means of the leaves, take fully developed leaves, with about half-an-inch of the leaf-stalk, and insert round the sides of pots prepared in the usual way for cuttings. Bury about half-an-inch of the base of the blade of the leaf in the soil, and put the cutting pots in a position similar to that recommended for those in which the seed is sown. The soil must be maintained in a nice moist state, and when the leaves begin to turn yellow in the autumn withhold the water altogether. The leaves that strike will remain green and plump until the autumn, but the others will quickly decay, and must be removed. Leave the small corms that will have formed at the base of the leaves, in the cutting pot until the following spring, and then shake them out of the old soil, pot separately, and place in a frame or house where they will receive the assistance of the temperature stated above as being the most suitable for them during the earlier stages of growth.

In the case of the established plants, the water must be gradually withheld when the plants go out of bloom, and during the winter they should be kept perfectly dry, and be placed where they will be quite safe from frost. The corms may be shaken out and kept in sand, but it is much better to leave them in the soil.

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THE EXHIBITION OF FLOWER BEDS to be held in the gardens of the Royal Botanic Society, on Thursday, June 1, breaks quite new ground; and, if well carried out, will be exceedingly interesting and instructive to those who have an opportunity of visiting it. The beds are to be of an ordinary size, and laid out on the lawn, and the plants employed in working out the designs are to be in pots plunged in sand. On the same day the Duke of Teck, President of the Society, will open the new wing of the great conservatory in the gardens.

## CULTIVATION OF POTATOES FOR EXHIBITION.

BY PETER MCKINLAY, ESQ.,

Beckenham, Kent.



THE cultivation of potatoes for exhibition purposes has of late years acquired immense importance, for at the exhibitions held in the more important of the provincial towns, such as Birmingham and Stamford, liberal prizes have been offered for potatoes; and in London an exhibition consisting exclusively of them has been held; I am, of course, alluding to the International Potato Show held at the Alexandra Palace in September last, which was so remarkably successful that the committee have very wisely determined upon repeating the experiment in the forthcoming autumn. For very many years potatoes were hardly tolerated at horticultural exhibitions; and when classes were provided for them, they were, as a rule, placed as much out of sight as possible. But there has of late been a marked change in the public opinion in reference to this esculent, and the immense display at the Alexandra Palace proved very conclusively that well-grown examples, when nicely washed and arranged with some degree of taste, produce a most pleasing effect. Indeed, the immense assemblage of potatoes, representative of all the leading varieties in cultivation, had such an effective appearance that it quite surprised even those who had been accustomed to potato growing all their lives, and the expressions of delight and surprise on the part of the general public were unbounded. The International Show has indeed given a quite new impetus to potato culture; and as one of the leading exhibitors, I have received more inquiries in reference to the various details, and the selection of suitable varieties for exhibition, than I can possibly find time to answer. Therefore, to show that I am really desirous of assisting those who, like myself, take a special interest in the potato, I will give an outline of a course of culture by which most successful results may be ensured, and also the names of the finest varieties for exhibition.

The cultivator of potatoes for exhibition is pretty much at the mercy of the soil, and his labours will be light or heavy, according to the character of the land. In every case the task of producing first-class tubers is not particularly light; but when the soil is unfavourable, the labour and difficulties are very much increased, for it will not suffice to have tubers of large size; they must also be regular in form and smooth in the skin, and if the soil is not favourable to the production of tubers possessing these characteristics, it must undergo a special course of preparation before the cultivator can hope to occupy a very high position upon the prize list. Loamy soils of a friable character are the best for potatoes intended for exhibition, as in these there will not be any special difficulty in obtaining them of large size and fine quality. In light soils the tubers do not in dry seasons attain so large a size as is desirable; but on heavy soils they are often so coarse that they

cannot be exhibited. Of the two extremes, the light soil is the best, because by the addition of liberal dressings of manure, crops of excellent quality can in the majority of seasons be obtained. Much may also be done in the improvement of heavy clays by the addition of lime rubbish, sand, wood-ashes, and indeed other matters that would help to make the staple more friable, provided, of course, they are in no way unfavourable to the growth of the potatoes. A situation sheltered from the north and easterly winds is preferable, for the tops are very susceptible to injury from spring frosts, and as even slight checks exercise an influence upon the crop, it is desirable to plant them in a position where they will be least likely to be injured by frosts and cold winds when the haulm is in a tender condition. Soil that was manured in the autumn, dug up deeply, and left in a rough state, will now be in the best possible condition for planting; for it will be in good heart, without the potatoes coming in contact with fresh manure, and the surface will have become nicely pulverized by the action of the weather upon it in the course of the past winter.

To bury potato sets, as is frequently advised, is in many instances injurious to the crop, and in no case is it necessary, for when the potatoes are planted entirely on the surface, it is a very easy matter to cover them sufficiently by drawing the soil to the ridges from the space between the rows. Indeed, in planting on heavy soils, the sets should be laid on the surface of the ground, and a few inches of soil drawn over them. The requisite depth of soil can afterwards be added by drawing more to the ridges when the haulm begins to show through the soil, and when they receive their final earthing up. It is most desirable to add the soil at three or four operations, and to be careful to draw the well-pulverized soil from the surface each time, so that there may be no hard lumps to prevent the perfect development of the tubers.

In planting below the surface, open out shallow trenches with the spade, and after the potatoes have been laid along these, at the proper distance apart, fill in carefully, and as far as can be conveniently done, put the hard lumps, if any, on one side.

In the production of exhibition specimens, the rows must be from three to four feet apart, and the sets from sixteen to eighteen inches apart in the rows, according to the growth of the haulm; for unless the tops have sufficient space to spread freely, large tubers of fine quality will not be obtained. Main-crop potatoes grown simply for home consumption should be allowed nearly, if not quite as much space, for it is now generally acknowledged by first-class cultivators that nothing is gained by overcrowding. A dressing of superphosphate of lime, guano, or bone-dust, at planting time will be most beneficial; and it should be spread along the drills previous to the sets being placed in them, at the rate of about five hundred-weight per acre. Soils that were dressed liberally with farmyard manure in the autumn should have a lighter dressing of artificial manure; others that are very poor, a trifle more. When guano is employed, it should be mixed with equal quantities of wood ashes, if the ashes can be conveniently obtained.



Large tubers cut into sets of medium size, and furnished with two or three short purple sprouts are preferable to all others, as they yield the heaviest crop of good tubers.

It is hardly necessary to say that the space between the potatoes must be kept perfectly free from weeds throughout the season, but it may be well to remind amateur cultivators that the frequent hoeing necessary in the early part of the season for keeping down the weeds, will also be most beneficial to the crop, especially if the soil has a tendency to harden on the surface. The earthing up should commence at an early stage, and be accomplished in a gradual manner, as there is the less likelihood of the stems being injured.

As the new kinds are added as fast as they make their appearance, my collection is now very large, and this season I shall plant 120 varieties. This number is much beyond the requirements of the amateur, and from it I have selected twenty-four, all of which are of the highest value, and should be grown by all who wish to be in the front rank at the exhibitions.

*Ashtop Fluke.* A handsome potato belonging to the Lapstone section, and therefore of excellent quality.

*Bountiful.*—A beautiful red kidney of medium size, productive, and of fine quality.

*Blanchard.*—A handsome round potato, prettily marked with purple on a yellow ground.

*Early Paragon.*—A kidney-shaped potato of American origin, equal in earliness to the Early Rose, and producing handsome tubers.

*Early Oneida.*—An American potato, handsome and of good quality, on most soils.

*Excelsior Kidney.*—A remarkably fine potato of the Dawe's Matchless type, that can be very strongly recommended.

*Headly's Nonpareil.*—One of the very finest forms of the Lapstone race.

*King of Potatoes.*—A yellow-fleshed potato, variable in form, and of good quality.

*Model.*—A large, heavy-cropping potato, handsome in shape, of good quality, and well adapted for main crops.

*Magnum Bonum.*—A very handsome and productive late potato of fine quality, now being distributed by Messrs. Sutton and Sons, Reading, for the first time.

*Porter's Excelsior.*—A flattish-round potato, remarkable for its handsome appearance and excellent quality. This is now being offered by Messrs. J. Carter and Co., of High Holborn.

*President.*—A fine kidney-shaped potato of good quality.

*Prince of Teck.*—A rather early variety, remarkable for its handsome appearance.

*Red Emperor.*—A flattish-round deep-red potato, one of the most handsome of the coloured varieties; it is productive, and of good quality upon the table.

*Rector of Woodstock.*—A medium-sized round potato, very handsome; a fair cropper, and of the finest quality.

*Ruby.*—A new red kidney-shaped potato raised in America, and of great promise.

*Salmon Kidney*.—A long and very handsome kidney-shaped potato, of a pale salmon-colour.

*Scotch Blue*.—A large and handsome well-known potato, with purple skin.

*Sedilla*.—A late kidney-shaped variety, the tubers large and handsome, and the quality good.

*Snowflake*.—The best of the American varieties; the tubers are large, very handsome, and of most excellent quality.

*The Schoolmaster*.—A handsome potato of oval shape, and of excellent quality when nicely served.

*Waterloo Kidney*.—A handsome and most desirable potato.

*Wonderful Red Kidney*.—An excellent potato of its class.

*Yorkshire Hero*.—Another fine form of the Lapstone race, that can be well recommended.

## CHOICE CAMPANULAS.

BY WILLIAM GARDINER.



THE Campanulas, of which there are a large number of most beautiful kinds in cultivation, form a very important class of hardy flowers specially adapted for the mixed border. They differ so much in the shape and the colour of the flowers, and in habit also, from the majority of the hardy herbaceous plants, that a selection of the finest kinds are indispensable to herbaceous borders having any pretensions to completeness. Some possess also considerable value for pot culture, as, for example, the Chimney Pot Campanula, *C. pyramidalis*, which is probably one of the most striking flowers we have for the decoration of the conservatory and promenade during the late summer and autumnal months. The most valuable kinds have also the great merit of comparative cheapness, and by far the greater proportion of those in cultivation can be increased from seed, which also is obtainable at a very low rate. Campanulas may, for cultural purposes, be separated into two distinct classes—the one class to comprise the dwarf-growing forms, such as *Campanula fragilis*, and *C. Raineri*, which succeed more satisfactorily and appear to better advantage when planted on rockwork, or on mounds raised somewhat above the general level; and the other, the tall, robust growers, such as *Campanula grandiflora* and *C. pyramidalis*.

The dwarf-growers belonging to the first of the above-mentioned classes are not, perhaps, of so much value from a decorative point of view as their more robust congeners; nevertheless, when planted in suitable positions upon the rockery, they bloom so profusely as to produce a very nice effect in conjunction with other subjects. To have them in perfection, a ledge, affording them a good depth of soil, and so arranged as to catch the rain, must be selected, for they require a rather liberal supply of water during the summer season, and when

planted on a slope that will allow the rain to run away without moistening the soil to a depth exceeding an inch or so, they will not make so vigorous a growth or bloom so profusely as would be the case under more favourable conditions. The principal object in planting them on elevated positions is to avoid any risk of the roots being injured by an excess of moisture in the soil during the winter, and to afford them an opportunity for displaying their lovely flowers to the best advantage. Indeed, few rock plants produce when in bloom a more beautiful effect than *Campanula muralis* and *C. garganica*, for they form fine pendant sheets of the most lovely blue flowers.

The dwarf kinds are all very beautiful, grown in rather deep pans or pots, and they can be wintered in a cold frame, or out of doors, with the pots or pans plunged in coal ashes or cocoa-nut fibre refuse. Pot-culture can be recommended to those who have a limited space at their command and no suitable position in which to plant them. They are eminently adapted for the alpine house, as they mostly bloom in summer after the majority of the occupants of this structure are past their best. The pots must be well drained, and the compost moderately rich and friable; a mixture of fibrous loam, leaf-mould, small crocks, and sand being in every way suitable. The loam should be in the proportion of three parts, the leaf-mould one part, and the sand and small crocks, when mixed together in equal quantities, one part. A few small pieces of stone laid on the surface of the soil will improve the appearance of the plants, without being in any way detrimental to their health; but this matter may be left to the taste of the cultivator. They may all be propagated by division when commencing to grow in the spring; and if it is desired to form good specimens as quickly as possible, they must not be separated into very small portions. Whether it is desired to increase the stock or not, the plants, after they reach a large size, must be reduced annually moderately by removing a few of the shoots when they are commencing to make new growth, and at the same time the ball of soil should be reduced sufficiently for them to be returned to pots of the same size, or a little larger, and at the same time have a considerable addition of new soil.

The strong growers produce the best effect when planted at intervals along the front of borders filled with delphiniums, phloxes, herbaceous lobelias, and other showy herbaceous plants. The exact position must be determined by their height; but whether in the first, second, or third row, they should be planted with some degree of regularity throughout the entire length of the border. Like many other hardy herbaceous plants, the most satisfactory growth is made by the Campanulas in soils that have in the first instance been deeply stirred and liberally dressed with leaf-mould or manure. But they are less particular as to the character and richness of the soil than the majority of their congeners; and wherever the phloxes and other free-growing herbaceous plants are found to thrive, no difficulty will be experienced in having campanulas in perfection. When in pots, they may be planted out at almost any time; but when in the open border, they should be lifted and replanted in October, or in the

spring prior to their commencing to grow freely. It is an excellent plan to lift the stools every second or third year, reduce them a little, and after some manure or leaf-mould has been dug in the stations, replant in the same position. The trimmings may be employed for increasing the stock, if it is so desired. When left long in the same stations, and allowed to produce all their flower-stems year after year, they decrease considerably in vigour, and, of course, are not so effective as more robust specimens.

In raising a stock from seed, a beginning should be made in April or May, as the seedlings will then have a long season of growth before them, and by the autumn will have become so strong that a good display of bloom may be expected the following summer. Two of the finest kinds, *Campanula media calycanthema* and *C. pyramidalis* should be grown as biennials, and the stock renewed annually from seed. If the quantity of seed to be sown of each kind is small, the best plan would be to sow in pans or boxes, prepared in the usual way, and then place them in a cold frame, or in a shady position out of doors, and lay pieces of glass over the surface. Otherwise sow in beds out of doors. In any case assist the germination of the seeds by maintaining the soil in a nice moist state; and when of a suitable size, prick the seedlings into nursery beds, and put them three inches apart each way. In the autumn, they can be planted in their permanent quarters out of doors, or be lifted and put into pots, if required for pot culture. The directions for raising seedlings apply with equal force to dwarf and tall growers.

The two best kinds for pot culture for the decoration of the conservatory, have been already mentioned, and as they require special management to have them in perfection, it is necessary to give a brief outline of their cultural acquirements.

*Campanula media calycanthema* has a calyx of the same colour as the flower, which gives the appearance of two flowers, one inserted within the other. It is much more effective than the old *Campanula media*, commonly known as the Canterbury Bell. The colours are the same in both cases. In the autumn the plants should be potted up; and if large specimens are required, put three or four in eight-inch pots. These will not require a second shift; but if wintered in a cold frame, and watered liberally after the commencement of the spring season, they will bloom superbly in the course of the summer. *Campanula pyramidalis* should, at the same time as the preceding, be put singly into five-inch pots, and be placed in a cold frame for the winter. In the spring, plant in a bed of rich soil out of doors; again lift and pot in the autumn and winter in a cold frame. This time they are to be potted in eight-inch pots, and in the spring to be shifted into other pots, ten or twelve inches in diameter. The compost should consist of two parts turfy loam, and one part of well-rotted manure. In May or June the flower-spikes will make their appearance, and if assisted with liberal supplies of water, they will attain a height of six or seven feet, and bloom nearly throughout the entire length. The smallest plants may be left in the eight-inch pots, in which they will bloom very satisfactorily.

It is not desirable in the first instance to purchase too many

sorts, and the following may be mentioned as comprising the finest at present in cultivation. Dwarf kinds for rockeries and raised borders :—*Campanula carpatica*, *C. fragilis*, *C. garganica*, *C. muralis*, *C. pumila*, *C. Raineri*, and *C. turbinata*. Tall kinds for the herbaceous border :—*C. glomerata*, *C. grandiflora*, *C. lactiflora*, *C. media calycanthema*, *C. persicifolia*, *C. pyramidalis*, and *C. van Houttei*. With the exception of *Lactiflora*, the foregoing have blue flowers, and of the majority there is a white form also.

## NEW NOTES ON HYDRANGEAS.



THE Hydrangeas now form a most attractive group of hardy deciduous shrubs, for in addition to the well-known *Hydrangea hortensis*, introduced to English gardens nearly a century since, we have several most beautiful kinds of quite recent introduction that are as yet not so widely known as they should be.

For many years the old and most popular form mentioned above was regarded as a greenhouse plant, and treated accordingly, and for a long time after cultivators began to plant it in the open border it was not considered sufficiently hardy to be left out of doors without protection of some kind, and, until quite recently, it was common to see in gardens the Hydrangeas matted up, as if a blast of wind or a few degrees of frost would suffice to destroy them. Indeed, in some places they are still protected, and I have in my circle of horticultural friends several who consider the winter protection one of the chief points in their practice, and according to present appearance the strongest arguments are not likely to have much effect upon them. Reference is here made to friends who take something more than the usual degree of interest in these shrubs, and who can in the course of the season show their friends huge bushes, bearing an immense number of flower heads; and herein lies the difficulty of persuading them that protection is unnecessary. If you discuss the matter with them they at once say, "Look at these specimens; they are such as you do not see every day, and if by protecting such fine examples can be produced, why should protection be abandoned." And as it is difficult to persuade them that care and attention have contributed more to their success than the assistance afforded by the protecting materials, I usually allow the subject to drop, and leave them to enjoy their opinions. But if I am candid with my readers, I must tell them that the Chinese Hydrangea, the one so well-known, is so hardy that it may be left out of doors throughout the whole year, without the least risk of injury, excepting it be in the northern parts of the country where the plants do not have an opportunity of well ripening their wood. It is, of course, impossible here to consider extreme cases, and throughout the greater part of the United Kingdom it may be considered perfectly hardy, and steps taken accordingly, without any risk of the result being otherwise

than satisfactory. The more recently introduced kinds, which have mostly come from Japan, are of an equal degree of hardiness, and may be cultivated under much the same conditions. Attention has been specially directed to their hardiness, because I am desirous of showing that owners of gardens in which there is no glass whatever, may enjoy the beauty of the flowers without having the garden disfigured during the winter season with mats or heaps of coal ashes or leaves; and also that when large specimens are required for the embellishment of the terrace or steps, they may be grown without occupying space required for subjects that really want shelter.

All the Hydrangeas are somewhat particular as to the character of the soil, and, as a rule, they make the most vigorous growth and bloom most profusely when planted in friable soils resting upon a dry, warm subsoil, and the least satisfactory progress in heavy clays. But even on soils of the description last mentioned, fine specimens, bearing an abundance of flowers, may, with a little extra trouble, be had. Previous to planting them in clays, whether along the front of the shrubbery border, or in beds by themselves, take out a portion of the staple soil and fill in with road scrapings, turfy loam, and partly decayed manure, and well incorporate with the staple to a depth of twelve or fifteen inches. Previous to planting in soils of an ordinary description it will suffice to mark out the stations, and then dig in a moderate quantity of manure. They may be planted at any time when the soil is in a workable state; and April is, perhaps, one of the best months in which to plant, as they then have the whole summer in which to become established, and acquire strength for the production of a splendid display of bloom the following season. The usual height of these shrubs is from eighteen inches to two feet, and the best effect is produced by planting them about eighteen inches from the edge of the grass, or the side of the walk, with some evergreen shrub of low growth in front of them.

Small plants consisting of a single stem, and bearing one large head of bloom, such as may be seen in the florists' shops in the early part of the summer, are very useful for decorative purposes generally. They are more especially useful for placing in jardinets and fancy flower-pots in the drawing-room window, as they are not readily affected by adverse influences, and they remain in perfection a considerable period. They, however, produce the most powerful impression when in the form of specimens measuring four or five feet over, and as they may be had of large dimensions by a very simple course of procedure, I would strongly recommend amateurs to try their hands at their production. For conservatories, terraces, and, indeed, promenades generally, they are alike valuable, and when well done generally bring the cultivator much credit. To work up large specimens, commence with plants two or three years old, and some time before they commence to make the season's growth prune all the shoots back to just above the first joint, and then turn them out of the pots, reduce the ball of soil considerably, and after trimming the roots moderately, return them to pots one

size larger than those previously occupied. In subsequent years they must be pruned and repotted in much the same manner, but instead of the shoots being cut back to within so short a distance of the soil, the young shoots, that is those produced the previous year, must be pruned to just above the first joint from the old wood, and it may be as well to say that unless this severe pruning is followed up, the plants will soon be filled with a mass of worthless spray, instead of having a fair number of shoots of sufficient strength to bear large heads of bloom. Those out of doors must be pruned in much the same manner. To secure a stock of plants for producing huge heads of bloom while in a quite small state, strike cuttings of the young shoots as early in the summer as the wood is moderately firm. Shoots of two or three joints, taken off near the base, and inserted several together in medium-sized pots, and shut up in a frame or under a hand-glass, will strike freely. Pot them off separately immediately they are nicely rooted, and when the small pots are moderately well filled with roots shift into other pots two sizes larger, and this will suffice to carry them until the end of the summer, and indeed until they have bloomed the following season, if it will be more convenient to keep them in small pots. The compost to consist of turfy loam two parts, and well-rotted manure one part. During the first season the most satisfactory growth will be made in a well-ventilated pit, but if it is not convenient to keep them under glass, place them at the foot of a south wall, and in any case they must be out of doors during September and October, to secure the thorough ripening of the wood.

One of the chief points in the cultivation of *Hydrangeas* in pots is to supply them copiously with water from the moment they commence to make new growths in the spring, until the autumn following, when the development of the new wood is complete. The large specimens should from April to August be stood in pans containing three or four inches of water; but the smaller plants may be supplied with a sufficiency of moisture without the intervention of pans or saucers. Liberal supplies of liquid manure will be highly beneficial, and especially so to the plants in small pots. The out-door specimens will also receive material assistance from copious supplies of water during periods of dry weather, but, generally speaking, those out of doors do very well indeed without the aid of the watering-can.

*Hydrangeas* in pots may be wintered in cold frames, sheds, or out of doors; but when left out all the winter the pots must be plunged in coal ashes or some other loose material, because of the risk of the pots being split and the roots injured by the undue exposure to the winter frosts. The plants intended for forcing should be kept in a frame and pruned early in the winter, as they start more readily into growth when placed in heat than others kept out of doors.

The sorts worthy of the most general cultivation in addition to *Hydrangea hortensis*, are:—

*H. hortensis variegata*, a beautiful variety with variegated foliage. This at the winter pruning should be cut close down to the surface

April.

of the soil, to encourage the production of strong shoots from the base.

*H. Otaksa*, a very large flowering species, of great beauty; the flower heads, even of comparatively small plants, frequently exceeding twenty inches in diameter. It is of vigorous growth, has bold handsome foliage, and the flowers are a pleasing shade of rosy-pink.

*H. paniculata grandiflora*, a very handsome form, bearing pyramidal panicles twelve inches in depth and eight inches in diameter, crowded with white flowers. It blooms very freely, and is one of the finest dwarf flowering shrubs in cultivation.

*H. stellata prolifera* is a small-growing kind, with neat foliage, and bearing a profusion of small trusses of double bright pink flowers. It is a very beautiful little plant for pot culture.

J. W. B.

## GARDEN DAISIES.

BY W. COLE, GROVE VINEYARD, FELTHAM.

"These flow'rs white and red,  
Such that men callen daisies in our town;  
To them have I so great affection."—CHAUCER.



ASTLY different to the "Wee modest crimson tipped flow'r" of Burns are the double daisies of the garden, for they have, comparatively speaking, flowers of large size and exceedingly rich colour; and, in their season, make so brilliant a display in the parterre, that they have but small claims to modesty. They indeed more properly belong to "the flaunting flow'rs the gardens yield;" and as they form one of the most valuable classes of spring-flowering plants we have for massing, the readers of the FLORAL WORLD who like to have their gardens bright and attractive during the spring as well as in the summer, may with advantage consider how far these flowers are likely to be of service to them.

For my own part—and there is not a single spring flower with which I am not well acquainted—I believe them to be unsurpassed in utility for the purpose here indicated. The daisies are perfectly hardy; not only are they capable of withstanding the effects of the most severe frost likely to be experienced in this country, but they are hardy enough in constitution to withstand the adverse influences of a saturated condition of the soil during the winter season. There are plenty of plants flowering in spring hardy enough to bear exposure to the severest frost without suffering, provided they are planted in a dry soil, but which perish outright, or are so much injured as to be of little service, when planted in a cold wet soil, whether the winter is severe or not. Then, again, the daisies can be multiplied to any extent by pulling the tufts to pieces, which is perhaps the simplest form of plant propagation known.

Early and continuous flowering are not the least of their merits,



and the estimation in which they are held by those who devote special attention to the decoration of the flower-garden with spring flowers is sufficiently exemplified in the gardens of Belvoir, Clevedon, and those of other well-known establishments.

There are now in cultivation several distinct types of double daisies, and all of them possess some degree of merit, although of course some are of greater service for massing than others. There are the *Crown Daisy*, the *Hen and Chicken Daisy*, the *Quilled Daisy*, and one or two others, and of each of the forms there are several colours. The *Crown Daisy* has the largest flowers of all, and a vigorous, spreading habit, but unfortunately it is late in coming into bloom; for although it produces a fair sprinkling of flowers in April, it is not until May that it is at its best. Of this form several very beautiful varieties have been introduced, under the designation of *Victoria Daisies*, by Mr. Knight, of Battle; and for the formation of clumps along the front of borders, from which there will be no necessity to remove them until they have done flowering, they can have the heartiest recommendation.

The highest coloured of the several crimson or red daisies, which is known in the trade catalogues as *Bellis perennis rubra*, has very small flowers, and is not so effective, *en masse*, as one or two others of a lighter shade. The variety known in the trade simply as the *Double Red* is the best of all the red varieties, for the flowers are of a large size, and perfectly double, and the colour is sufficiently deep to produce a very rich effect. The *Double Pink* variety is not, strictly speaking, double; but it is so wonderfully free, that solid masses of the most delicate pink flowers are formed, and the effect is so good, that we can well afford to overlook the fact of the flowers not being perfectly double.

The *Double White* also has a tendency to show a yellow centre, especially when the plants are partly exhausted in the production of flowers; but this is not, practically speaking, worthy of a moment's consideration, for when in the beds and sheeted with bloom, the centre of the individual flower is not discernible. It is, perhaps, the very best of the white spring flowering plants, and is admirably adapted for forming a marginal band to beds filled with blue pansies and violets, as well as for beds of the dark daisies. The spotted-leaved daisy, known in the catalogues as *Bellis perennis aucubæfolia*, is very attractive, and on light, friable soils, it makes an excellent golden edging plant for small beds; but on heavy soils it suffers more or less, and loses its foliage, from which it may be inferred that it is not so hardy as the green-leaved types.

Double daisies ripen seed, and from the seed a few plants bearing double flowers may be expected, but the proportion will be so small, that unless, as is most unlikely, one or two are considerably in advance of others already in cultivation, those who value their time and the space at their disposal for the cultivation of flowers will certainly consider the results anything but satisfactory. If the raising of seedlings is resorted to, the best seed obtainable should be procured early in the summer, and at once sown on a nicely prepared bed of soil occupying a shady situation. The bed must be

weeded and watered at intervals as may seem necessary; and when the seedlings are large enough to handle, transplant into nursery beds, and they will bloom the following spring. The best of them may afterwards be planted in the flower-beds in precisely the same manner as the stock raised from offsets.

It will in every way be more satisfactory to commence with established varieties, and the work of purchasing and dividing should commence in the course of the current month, or early in May. The smallest scrap planted now will make a strong tuft by the autumn; and the amateur who can spare the ground, and is prepared to give the plants the little attention requisite to maintain them in a flourishing state through the summer, should purchase a stock in spring in preference to waiting until the autumn. Strong clumps may be obtained at a very low rate; and if it is desired to increase them to the fullest extent, divide into single crowns, and, as far as possible, separate them so that each piece will have a portion of the roots adhering to it. When the stock has become larger, divide the clumps lifted from the beds into portions consisting of three or four crowns each. As daisies are liable to suffer from drought during the summer, select a rather shady situation, not overhung with trees, for their summer quarters. Plant in rows nine inches apart, and put the plants from four to six inches apart in the rows, according to their size. A few good soakings of water when newly planted, and keeping them free from weeds, constitute their summer management; and in October lift and plant in the flower-beds about six inches apart each way.

## MELON CULTURE IN A NUT-SHELL.

BY THOMAS TRUSSLER,

Nursery, High Path, Edmonton.



MELONS are of more difficult cultivation than cucumbers, but the production of a first-class crop is not beyond the means of the majority of amateurs, as I shall in a very few words indeed be able to show. Writers upon the cultivation of these fruits usually have so much to say in reference to the difficulties with which the cultivator is likely to be beset, and enter so fully into the details that most amateurs who would be delighted to place upon their table a well-ripened melon of their own production, shrink from making the attempt. I am an old cultivator, and for the guidance of those in need of information, I shall, in compliance with the wish of the Editor, briefly describe my practice.

The intending cultivator must bear in mind that melons, coming as they do from tropical countries, cannot be grown in a successful manner without a high temperature being maintained about them. Nice crops have been produced without the aid of artificial heat,

either from fermenting materials or a heating apparatus ; but, according to my experience, some amount of artificial heat is necessary, for we cannot be sure whether the temperature of the summer will be above or below the average. However, very little artificial heat will be required if preparations are made early in the spring, so as to give the plants the fullest possible advantage to be derived from the summer's sun. Those who have properly heated pits and houses will not be in much need of information, and as I am anxious to be as brief as possible, I will confine my remarks to the production of melons in an ordinary garden frame. To begin early and well is an important step towards success, therefore I would advise the formation, as early in April as can well be done, of a large heap of fermenting materials. The heap should be two feet wider than the frame all round, and quite four feet high. Small heaps hardly large enough for the frame, and two feet or so high, are of very little use, for the heat is soon blown out of them, and the melons do not receive the assistance from it they should do. Large heaps are not extravagant, for the manure when the frames are removed in the autumn is in the best possible condition for the kitchen garden or flower beds.

The bed in which to plant the melons should be formed with loam, somewhat heavy ; no manure, leaf-mould, or other fertilizer must be added. After the bed of fermenting materials has been made up three or four days, and the frame put upon it, place under the centre of each of the lights two barrowfuls of the loam, and form neat heaps with it. Immediately the soil is nicely warmed through, put two plants in the centre of each heap, and water them well in, and for three or four days afterwards screen from brilliant sunshine, and then shade no more, for there is not the slightest risk of the most brilliant sunshine doing them harm, provided the frame is ventilated sufficiently to keep the temperature down to 80°. It may be well to make the reader acquainted with the fact that the heat of the fermenting materials is sometimes very fierce at first, and that if the plants are put out before it has subsided there will be a great risk of the roots being burnt. A bottom heat of 85° is quite sufficient, and when the beds are formed a thermometer should be inserted in one of the beds, and if it is found at the end of three days after the soil has been placed in the frame, that the heat of the beds does not exceed 85°, no danger need be apprehended, and the plants may be put out. The bed of soil must eventually be extended over the entire surface of the fermenting materials, but it is best to form the bed gradually by adding about fifteen inches of soil to the sides of the bed as fast as the roots make their appearance on the outside.

The training of the vines is very simple. In the first place, the plants must be stopped at the third or fourth leaf. If they are shifted into six-inch pots before planting out, stop whilst in pots, otherwise do not stop until the plants are established in the bed, as evinced by their commencing to grow freely. In due course each plant will produce from three to four shoots, and these must be trained over the beds to secure an equal distribution of the vines. When these shoots nearly reach the sides of the frame, nip out the

growing point, and laterals will soon be produced along the whole length of the shoots, and the majority of these will bear a fruit. Each plant will not be able to carry more than four or five fruits, but the first fruit on each of the laterals must be allowed to remain until rather larger than a pigeon's egg, for they sometimes turn yellow and drop off just before reaching the size here mentioned. When it is seen that the fruits are swelling freely, thin them to four or five to each plant, stop back the laterals from which the fruit is removed to about the fourth leaf, and allow the others to go unchecked, as the fruit will keep them within bounds. The superfluous shoots must be thinned out in the course of the summer, to prevent over-crowding, and they should be removed whilst in a small state with the finger and thumb.

They require syringing overhead twice a day, until the ripening of the fruit commences, and liberal supplies of water also at the roots. No water must, however, be applied from the time the fruit is set until it is as large as a pigeon's egg, or it will assuredly turn yellow and refuse to swell. It is important, therefore, to give the plants a thorough soaking of water just before the female flowers begin to expand, so that the plants may not suffer from dryness at the roots.

Two of the best melons for the amateur are *Gilbert's Green-flesh* and *Scarlet Gem*.

## MANAGEMENT OF THE INDIA-RUBBER PLANT.

BY A PARLOUR GARDENER.



FOR placing in the windows of the drawing-room and other indoor apartments, the India-rubber Plant (*Ficus elasticus*) is held in high estimation by those conversant with the plants most suitable for the embellishment of the dwelling-house. Its popularity, however, does not exceed its merits, for when well developed it is remarkably bold in habit, distinct in character, and highly ornamental in appearance. The India-rubber Plant has also the great merit of adapting itself to situations most unfavourable to plant life, and with ordinary care will grow vigorously in towns as well as in country districts, where it can enjoy the pure air so essential to the health of the majority of ornamental plants. The leaves of the *Ficus*, unlike those of the majority of other plants hardy enough in constitution to be grown in the dwelling-house, are very thick and leathery in texture, and have so highly a polished surface that the dust and other impurities of the atmosphere of towns cannot adhere to them, and if the dust should settle upon the surface it can be readily removed with the aid of a sponge and a little clean water, and the plants be again made to present a fresh and bright appearance.

To propagate the India-rubber Plant is not so easy a task as

some writers would have us suppose to be the case, for to ensure success some skill in the preparation of the cuttings, and the assistance of bottom heat are necessary. This is a matter of very little consequence, for the plants remain in good condition for many years, and when they become too large for the window there will not be much difficulty in making an exchange for others of a more suitable size. To begin with, plants ranging from six to twelve inches in height, and furnished with leaves to the rim of the pot, are the best; they are quite large enough to produce a good effect, and are not likely to soon outgrow the space allotted them. If they are in small pots and very much pot-bound, they should be repotted, but not otherwise, for when they have too much space at the roots they grow with more vigour than is desirable in the case of window plants that are no longer of any service after attaining a certain size, and, moreover, when in pots exceeding six inches in diameter a difficulty is often experienced in providing ornamental receptacles for them. They may, indeed, be maintained in the most healthy state in pots very small in proportion to the size of the plants, and the main point to be considered is to have the pots just large enough to balance the weight of the plant and prevent its falling over. As regards soil, it will suffice to say that good fibrous loam, to which has been added a liberal proportion of sand, is alone required; and it may be added that a more satisfactory growth will be made when the plants are potted in loam and sand than in a mixture containing peat, leaf-mould, or manure.

One of the most essential matters in the cultivation of the India-rubber Plant in indoor apartments is to keep the foliage perfectly clean, and this should be done by sponging the leaves with clean water as often as may be found necessary. As a rule, the leaves will require washing more frequently in winter than in summer, because of the dust from the fires, and at that season of the year tepid water should be used, both for cleaning the foliage and for applying to the roots. It may also be well to mention that during the winter season the most vigorous plants will require very moderate supplies of water to maintain them in the most perfect health, and that if they are overwatered the roots will perish and the plants suffer in consequence. In the spring and summer they may be watered rather freely, and at all times and seasons sufficient must be applied to moisten the whole of the soil contained in the pot. The importance of thoroughly watering them is alluded to because of so many amateurs losing plants of all kinds from giving them sufficient water only to moisten the ball of soil a few inches below the surface. The proper way to water is to give enough to run freely through the holes in the bottom of the pot, and then not give any more until the soil has become rather dry again.

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M. ADOLPHE BRONGNIART, the distinguished French botanist, recently died in Paris. He was born in 1801. Besides many botanical works, Brongniart is known as one of the first to discover the pollen-tube and the important nature of the offices performed by it in the fertilization of plants.

April.

## PREPARATION OF BEDDING PLANTS.

BY JOHN WALSH.



BEDDING plants require, during the month of April, special care and attention, for unless they are encouraged to make a vigorous growth until the time of their being transferred to the beds, and are also well hardened, before planting out, they will fail in producing a really satisfactory effect until the summer is partly past. Therefore a few remarks descriptive of the attention required now by plants intended for the decoration of the flower garden during the summer, will probably possess some degree of interest and usefulness.

The hardy bedders, such as the *Achilleas*, *Cerastium*, and *Centaureas* that have been wintered in a cold frame, may, if convenient, be planted out at once; but as a rule, it is found better to fill each bed with the different plants required for working out the design, whatever it might be, at the same time. If they are not to be planted out, remove them to a sheltered position out of doors, or to cradles provided for them. The cradles are so useful for hardening off bedders that a brief description of them will be of considerable service to many readers. They are formed by fixing on edge boards one inch thick by nine inches broad, parallel to each other, at a distance of four feet apart. The boards can be securely fixed by means of stout pegs driven into the ground on each side of them. In the cradles intended for plants in pots, place a layer of coal ashes about four inches in thickness, to prevent the worms entering the pots. If, however, it is intended to plant them out to strengthen, form a bed, consisting of good loamy soil, to which a small addition of leaf-mould or manure has been made. The exhausted soil from the potting-shed is often employed for bedding plants; but it is altogether unsuitable, for the plants now require soil containing sufficient nourishment to support a vigorous growth. Cuttings still occupying the pots in which they were struck, and seedlings in pans and boxes, should be at once either potted off separately, or planted out in a bed of soil prepared as here advised. They require less attention when planted out, and as they may be bedded out at the usual time without suffering materially, planting out can be recommended in preference to putting them into pots. All the small-growing subjects should be put three inches apart; those of large growth—the *centaurea*, for example—six inches. To guard against unnecessary injury to the roots, separate them as carefully as possible, in removing them from the pans or boxes, and to place them under the best possible conditions for becoming established quickly, plant firmly, and water them well in. Shade by means of canvas or mats during the first ten days or so, if the weather is at all bright. Also during a like period sprinkle them overhead once a-day, preferably in the afternoon, and afterwards they must be supplied with water, according to their requirements; and it may be well to say that they should

suffer from drought as little as possible, for the very common practice of allowing them to become occasionally dust dry, and remain so for a day or two, is most hurtful.

Hardy plants that have been raised from seed, or from cuttings in heat, should be protected from frost until they have become sufficiently hardened to bear the exposure without injury; but if they have been in the cold frame all the winter or for a considerable period, they will not require any further protection.

The bedders of the class represented by the geraniums, verbenas, and lobelias should as fast as possible be removed from the houses and pits to cold frames, to make way for more tender things, such as the alternantheras and coleus, now in the stove, and other heated structures. Autumn-struck plants that have throughout the winter been in freely ventilated structures, and have not been exposed to the influence of more fire-heat than was necessary for the exclusion of frost, may indeed be now removed to the cradles. For example, the calceolarias, petunias, lobelias, and verbenas are all hardy enough to be removed from the frames early in the month; but if they have been recently propagated, and are still young and tender, it will be better to leave them in the frames or houses until the middle of the month. The cradles for plants requiring a covering of some kind to protect them from frost, should have along the centre a strip of wood fixed to uprights two feet in height, for supporting the canvas mats or other materials that may be employed for protective purposes. The ageratum, lobelias, calceolarias, and indeed all the bedders of a similar degree of hardiness may be planted out in a bed of nice rich soil, as advised for the hardier kinds, with the full assurance of their doing well. Echeverias, and, indeed, succulents generally, may be planted in cradle beds in the same manner as other plants, and the only point of importance is to allow them sufficient space to increase considerably in size without growing out of shape through overcrowding. All plants in cutting-pots and seed-pans should be potted off separately, or be planted in beds as soon as possible, for there now remains a period of about six weeks only before they must be transferred to their permanent quarters. Especially is it necessary to pot off separately geraniums struck in the autumn or early in the spring that are still remaining in the cutting-pots. Geraniums that were struck in the open borders in the autumn, and potted separately, should, provided the time can be spared, be shifted into five-inch pots, and if needful be stopped, to encourage the production of side-shoots. In the ordinary course each of the plants repotted will be quite equal to two, if not three, of those allowed to remain in the small pots. No shading will be required for any of the bedders belonging to the class now under consideration, excepting for a few days after they are repotted or planted in nursery beds. The tender bedders comprising the alternantheras and the coleus should remain in the stove or heated pit until the first week in May, and be encouraged to make a vigorous growth. The coleus must be placed near the glass and fully exposed to the sun, for a firm short-jointed growth from the first is of the utmost importance. They must be shifted into five or six-inch pots, if they become pot-bound, a



month or so before they can be planted out, as it is essential to maintain them in a progressive state throughout, and it should be generally known that strong bushy plants, well established in five-inch pots are the most useful for bedding purposes. The alternantheras, on the other hand, should be grown in the shade, and be supplied liberally with water. Under these conditions they grow vigorously, and soon attain a comparatively large size; but when fully exposed to the sun they produce high coloured leaves, and increase in size very slowly, and the coloured leafage is not necessary until after they are bedded out. Alternantheras and coleus should be bedded out about the end of May, and to ensure their being well hardened, they must be removed to a cold frame, and be fully exposed during the day for a fortnight previously.

All the plants of a tufted or spreading habit, such as the cerasium, lobelia, and verbena, must be stopped as may appear necessary to keep them compact, and in some cases to prevent their being exhausted by flowering whilst in a small state.

## NOVELTIES FOR 1875.

BY GEORGE GORDON.



IN past seasons, a considerable number of novelties have this year been introduced to public notice, and, as usual, but few have justified the highly laudatory descriptions with which they were accompanied, and the major portion have proved to be quite inferior to the best of the established kinds in the respective classes. Some few of the new plants, fruits, flowers, and vegetables that have been announced in the trade lists, or have made their appearance, possess undoubtedly sufficient merit to justify their general cultivation for the purpose of supplementing or superseding, as the case may be, old favourites; and for the guidance of readers of the FLORAL WORLD who take an interest in novelties, I will proceed to give a few particulars of such of the new things as have come under my notice. For convenience of reference, I will group them under suitable headings, and commence with the

**PLANTS.**—The majority of these require a stove temperature, and consequently are of interest to a comparatively limited class of readers only.

*Bertolonia Van Houttei* is one of the most beautiful of the small-growing fine foliage plants. The leaves are of rich velvety green, with large bright rose-coloured spots regularly disposed over the surface. The colouring is exquisite, and the plants, when exhibited, excited much attention amongst connoisseurs.

Several new Begonias have been introduced, and as they may be grown to make a grand display in the conservatory during the summer, with the assistance of a common frame, they are deserving the attention of all classes. Some, indeed, are so hardy that they may be left



out of doors all the winter, provided the subsoil is dry and the situation sheltered. *B. fræbeli* is a stemless hybrid, with large woolly leaves, and bearing brilliant clusters of large red flowers, is said to be perfectly hardy, and if such is the case it will make a grand rock plant. *B. Model*, distributed by Messrs. J. Veitch and Son last spring, is a pretty, neat, and robust plant, with finely-formed flowers of a rosy bluish colour. *B. excelsior* is a strong grower, with brilliant cinnamon-red flowers. The following varieties, distributed by Messrs. E. G. Henderson and Son, are extremely fine: *B. Countess of Dudley* is a pretty, double pink variety; *B. Lord Londesborough*, double rose; *B. Lord Coventry*, a small grower, with magenta-coloured flowers; and *B. Prince of Wales*, a grand hybrid, the flowers nearly two inches in length.

The Crotons offered for the first time this season have been very indifferent, and not one of these possess sufficient merit to be required in even a large collection. There are, however, some good crotons in store, for at the principal exhibitions Messrs. J. Veitch and Sons presented two or three magnificent forms, with large trifid leaves, richly coloured with yellow and orange, and they are as remarkable for their effective colouring as they are for their thorough distinctness from all other crotons in cultivation. The best of these is the one shown under the name of *Disraeli*.

But few of the new Dracænas, like the crotons, possess much merit. One of the best is *D. hybrida*, a compact grower, with rather broad leaves variegated with creamy white, which in its turn is beautifully tinted and washed with delicate rose. *D. Rex*, a strong grower, with very large arching leaves, richly variegated with red, exhibited by Mr. Bull, will in all probability prove one of the best for exhibition and large structures.

*Poinsettia pulcherrima fl. pl.*, which has double bracts, and of which we had received glowing accounts from America, has passed into the hands of Messrs. Veitch, of Chelsea. This differs from the *Poinsettia* with which we are all familiar, in having double flowers, or, to speak more correctly, the brilliantly-coloured bracts are packed so closely together as to form large rosette-like heads. This will undoubtedly prove one of the most valuable of stove plants for winter decorations, as in some respects it surpasses our old and well-tried friend.

*Tillandsia Lindenii major*, introduced by Mr. B. S. Williams, is not a novelty of this year; but it is so very beautiful, and as yet rare in collections, that it well deserves to be mentioned here.

**BULBOUS PLANTS.**—The first of the novelties among bulbous plants are *Amaryllis Leopoldi*, a grand species with large flowers, the petals deep crimson, shading to pure white at the tips; *A. Hendersonii coccinea* is similar in character and style of colouring; *Crinum Moorei* is a nearly hardy species, bearing immense scapes of rosy-coloured flowers; *C. pratense canaliculatum* is a fine stove bulb, bearing strong scapes supporting umbels of about twelve bluish white flowers, each averaging five inches across; *Hippeastrum vittatum Harrisonæ* is a charming variety, the large handsome flowers beautifully marked with crimson on a waxy white ground.

**TREES.**—The most remarkable ornamental trees of this year are the *Purple-leaved Birch* of Mr. W. Paul, and the *Golden-leaved Laburnum* of Mr. R. Smith, of Worcester. The last mentioned has leaves of the richest yellow, which retain their bright colour throughout the season, and it may be considered one of the very finest of golden-leaved trees for the garden.

**FRUITS.**—New fruits of a meritorious character have been very few. The most important are undoubtedly the two apples, *Lady Henniker* and *Worcester Pippin*. The first mentioned is a grand culinary variety sent out by Messrs. Ewing and Co., of Norwich. The fruit is distinguished by its large size, fine shape, rich colour, and splendid quality. The tree is a heavy cropper, and it can be strongly recommended. It is in season from November to February. The second is one of the most attractive apples in existence; the fruit is large and handsome, and the skin is of a bright, glowing crimson colour and very beautiful. It is a very fine culinary fruit, and good enough for the dessert. Grape *Golden Queen* is a splendid variety; the bunches and berries large, the colour bright yellow, and the flesh rich and crackling. It is said to be specially adapted for greenhouse culture, and to bear well. *Waltham Cross* is a bold, handsome grape of a fine amber colour, and excellent quality. It is one of the finest amber-coloured grapes not having a muscat flavour.

**FLOWERS.**—The more important of these have been the roses; but as they have already had attention in these pages it is not needful to refer to them now.

**VEGETABLES.**—The new vegetables consist chiefly of peas and potatoes, although a few other novelties have been introduced. *Dean's Early Snowball Cauliflower* is an excellent variety for small gardens. It turns in quickly, occupies very little space, and produces heads of the size of a breakfast cup, which are quite large enough for table. *Cucumber Monro's Duke of Edinburgh* has been much liked for its extreme productiveness and splendid quality. The fruits average fifteen inches in length, are of an uniform thickness, and very delicate in flavour. *Tender and True* attains a much greater length than the preceding, and is a splendid fruit for exhibition. *Tomato Carter's Green Gage* is a fine variety, bearing medium-sized fruit of a bright golden-yellow and the most delicious flavour. It is productive and in every way first-class. *Potato Snowflake* has so far proved eminently satisfactory, for the tubers are large and handsome, and of excellent quality; in the latter respect quite surpassing the other American varieties. *Eureka*, another new American potato, appears to be of indifferent quality, and *Alpha*, which was distributed at twelve shillings per pound, is not worth as many pence, for it is a very poor cropper, and has no other good qualities to recommend it. With reference to the new peas, it may be said that Mr. Laxton's new varieties, some of which have been figured in these pages have proved desirable acquisitions.

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## MR. B. S. WILLIAMS'S NURSERIES, UPPER HOLLOWAY.



THE Victoria and Paradise Nurseries, Upper Holloway, have become so famous throughout the country for the extent and excellency of their productions, that a brief account of them will, we feel assured, prove most interesting to a large body of our readers. That they contain everything proper to the nursery trade is only a matter of course; but the collections of orchids, azaleas, camellias, cape heaths, stove and greenhouse plants generally, palms, cycads, ferns, and ornamental-leaved plants of all kinds, form distinct and most important features, each deserving of lengthy notice did space permit. The collections of the several subjects are not only remarkable for their extent; they claim attention also for the matchless specimens comprised in them. The specimen plants are mostly quite unsurpassed in trade collections, for Mr. B. S. Williams, the proprietor, exhibits largely in the course of the season, and is seldom elsewhere than at the head of the prize-takers in the classes in which he competes. At the principal metropolitan exhibitions, and at all the more important of the provincial gatherings, such as those held at Birmingham, Glasgow, Manchester, and Nottingham, the Holloway collections may be seen occupying prominent positions, and sustaining the high reputation of the nurseries. Mr. Williams does not, however, confine his efforts as an exhibitor, any more than he does his trade, to the United Kingdom, for at Brussels, Ghent, and other of the great horticultural centres on the Continent, his collections of plants are nearly as well known as in London. Most worthily, too, did Mr. Williams uphold British horticulture at the International Exhibition held last year at Cologne, and in recognition of his efforts was presented with a magnificent set of ornaments in high-class Dresden china, comprising clock, candelabra, vases, etc., the gift of the Crown Prince of Prussia, and several silver and bronze medals and diplomas. We mention this merely to show the vast resources of the nurseries, and the liberal spirit which actuates the proprietor in their management. The introduction of new plants forms a very important branch of the trade, and the novelties which Mr. Williams has been instrumental in introducing to English gardens occupy a foremost position in the class to which they severally belong, and bear ample testimony to the care and discrimination displayed in their selection for distribution.

The nurseries are situate at the foot of Highgate Hill, and most convenient of access from all parts of the metropolis, for omnibuses from the city and the west-end, and the cars of the North Metropolitan Tramway stop at the principal entrance, and in addition there is, within three minutes' walk the Upper Holloway Station, on the Midland Railway, which, in connection with the Metropolitan Railway, opens up direct communication with nearly, if not quite, all the railways entering the metropolis. A large conservatory forms the principal entrance, and this structure, although not fanciful in design, is remarkably neat and elegant, and sufficiently spacious to afford room for an immense assemblage of magnificent Cycads, Palms, Dracænas, Tree-ferns, and other ornamental-leaved plants suitable for the embellishment of the conservatory. Tree-ferns with magnificent stems, twelve feet and upwards, and surmounted with ample spreading crowns of fronds, abound; as also do grandly-developed examples of the choicest conservatory palms and dracænas, and these, with the miscellaneous plants, have a most picturesque appearance. It is not, of course, to be expected that every visitor should buy a portion of these magnificent specimens, yet apart from their great beauty, they are deserving of attention, for they show the true character of the respective plants to be met with in other structures in a small state, and serve as a finger-post to the amateur when making purchases. Some of the specimens in this structure are of a great age—the tree-ferns, for example; but in the case of the greater proportion, the cultivator may, by commencing with a small plant, costing a few shillings, hope to possess in a few years hence, specimens equal in development, if not in size, to some of the finest examples in the structure now referred to. The conservatory is not entirely given up to plants remarkable for the beauty of their foliage, or nobility of aspect, for there is at all times a good display of flowering plants, which imparts a brighter appear-

ance to the scene, and materially assists in bringing out the graceful outlines of the fine foliage plants. For some time past, *Primulas* and *Cyclamens* have entered largely into the decoration of the house, and it may not be amiss here to state that "Williams's Strains" of *Cinerarias*, *Cyclamens*, *Primulas*, and *Calceolarias*, have, by reason of their excellency, acquired a reputation that may be fairly described as world-wide, and have assisted in no small degree to build up the fame of the nursery. The flowering plants, it need hardly be said, vary according to the season; but visitors may at all times be assured of meeting with a good display of flowers. The *Azalea* and *Camellia*-houses are model structures of their kind, and their adaptability to the requirements of the inmates is abundantly exemplified by their extremely healthy condition, and the profuse manner in which they bloom in their respective seasons. The collections of these universal favourites are remarkably complete, for they comprise all the finest varieties, new and old, in cultivation, and in addition to thousands of plants of the ordinary size, there are considerable numbers of specimens and half-specimens, so that those who may be desirous of stocking their conservatories with specimen plants may do so.

The plant-stoves present at all times a remarkably bright and attractive appearance, for if there are at any season but few plants in bloom, the *Crotons* and *Dracænas*, of which there are now an immense number of splendid kinds in cultivation, are so richly coloured as to be well able to take the place of flowers. All the other fine foliage plants in the collection contribute more or less to the general effect; but none of them have such richly coloured leafage as the *Crotons* and *Dracænas*. They form two of the very best classes of fine foliage plants for the amateur, for they are not over difficult of cultivation, and for the dinner-table and indoor decorations generally, when it is safe to remove them from the stove, they are quite unsurpassed. In the stove the golden leafage of the *Crotons*, and the rich carmine, rose, and bronze tints of the *Dracænas* present a very striking contrast, and are remarkably effective. All the *Crotons* possess more or less merit; but as six kinds will suffice for a small collection, the following selection may be recommended as comprising the most distinct and beautiful kinds yet introduced, namely, *Croton angustifolium*, *C. Johannis*, *C. majesticum*, *C. undulatum*, *C. variegatum*, and *C. Weismanni*. The six best *Dracænas* for small collections, excepting the very newest, are, perhaps, *Dracæna amabilis*, *D. Cooperi*, *D. Chelsoni*, *D. magnifica*, *D. Sheperdi*, and *D. stricta*, the latter one of the oldest, and still one of the best.

Amongst the choicest of the miscellaneous plants in the stoves may be mentioned, *Anthurium Crystallinum*, a glorious plant, with huge shield-shaped leaves, overlaid with prominent silvery ribs on an olive-green ground; *Aralia Veitchii*, one of the most elegant little plants in cultivation; *Dipladenia Brearleyana* and *D. Williamsi*, two lovely stove climbers, of immense value also for exhibition specimens; *Ficus Parcelli*, a grand plant, with large leaves blotched with white; *Ixora Williamsi*, a splendid hybrid, raised in these nurseries a few years since, which has now taken its place as the best of its class for exhibition and general decorations; *Anthurium Patini* is a pretty species, with white flowers; and *A. Scherzerianum Williamsi*, a form of the Flamingo Plant, with white spathes, which as yet is exceedingly rare.

The ferneries are extensive and remarkable for the fine collection of filmy ferns and the grand specimens of the *Gleichenias*, which are quite unequalled in trade collections. As regards the general collection, we cannot do more than mention the fact that it comprises all the best species and varieties in cultivation; but there are two ferns to which we would direct special attention. One is *Alsophila Williamsi*, truly described as a "Weeping Tree Fern," for the broad fronds are decidedly pendulous, and the outline of the plant is extremely elegant; and the other is a Maiden-hair, namely, *Adiantum gracillimum*, and we have only to say that it is more light and elegant than *Adiantum cuneatum*, to induce our fern-growing readers to desire its possession. It is the best of all ferns for bouquets, as apart from its elegance, the fronds remain a long time in a perfectly firm state after their removal from the plant.

For many years before engaging in business, Mr. Williams was well-known as a most successful Orchid grower, and probably no one has done more towards popularizing these beautiful flowers. It follows, therefore, almost as a matter of course, that the collection of Orchids at Holloway is of considerable extent; and as

a matter of fact, it contains all the most beautiful kinds, from the new *Odontoglossum vexillarium* to the old and well-known *Dendrobium nobile*.

Of the collection of palms, greenhouse, and soft-wooded plants, space will not permit us to speak, but mention must be made of the splendid series of Achimenes and Gloxinias, and the beautiful Violas Mr. Williams has been instrumental in introducing to cultivation.

## THE GARDEN GUIDE FOR APRIL.

Fountain of light! from whom yon rising sun  
First drew his splendour; source of life and love!  
Whose smile awakes o'er earth's rekindling face  
The boundless blush of spring; O first and best!  
Thy essence, though from human sight and search,  
Though from the climb of all created thought,  
Ineffably removed; yet man himself,  
Thy humble child of reason, man may read  
The Maker's hand, intelligence supreme,  
Unbounded power, on all his works imprest,  
In characters coeval with the sun,  
And with the sun to last; from world to world,  
From age to age, through every clime reveal'd.  
Hail Universal Goodness! in full stream  
For ever flowing  
Through earth, air, sea, to all things that have life;  
From all that live on earth, in air, and sea.  
The great community of nature's sons,  
To thee, first Father, ceaseless praise ascend,  
And in the general hymn my grateful voice  
Be duly heard, among thy works, not least,  
Nor lowest; with intelligence inform'd,  
To know thee and adore: with freedom crown'd,  
Where virtue leads, to follow and be blest.  
Oh, whether, by thy prime decree ordain'd  
To days of future life, or whether now  
The mortal hour is instant, still vouchsafe,  
Parent and friend! to guide me blameless on  
Through this dark scene of error and of ill,  
Thy truth to light me, and thy peace to cheer.  
All else, of me unask'd, thy will supreme  
Withhold or grant; and let that will be done.

MILTON.

## THE FLOWER GARDEN.

THERE will be an abundance of flowers during the month in gardens where care has been taken to plant a goodly stock of spring flowering plants. *Hyacinths* and *Tulips* will be at their best, so also will be *Alyssum saxatile*, *Primula cortusoides amœna*, *Myosotis sylvatica*, *Anemone stellata fulgens*, *Primula acaulis*, double and single *Wallflowers* and *Silene pendula*, all of which are valuable for massing to produce a display of colour in the flower garden during the spring months. The planting of evergreens should be completed early this month. Stakes must be put to newly-planted trees, to keep them firm, and prevent their being loosened with the wind. A good thick mulch over the roots will be of immense service. Sow seeds of biennials and perennials, and annuals for late blooming; thin out those already up, and transplant or throw away. Finish dividing and planting herbaceous plants. Box, thrift, *Stachys lanata*, and other plants for edgings, may be planted, if done early in the month. Walks should be thoroughly rolled, to make them firm for the summer; and grass plots dressed, to give everything an air of neatness and order.

## KITCHEN GARDEN.

Plant out cabbage and lettuce and cauliflowers from the frames. Sow for main crops, beet, broccoli, cabbage, cardoons, carrots, celeriac, celery for late crop, chicory, endive, parsnips, salsify, scorzonera. For successional crops—lettuce, radishes, cress, mustard, spinach, turnips, peas, and other vegetables; plant out crops from the seed beds when large enough. Keep the hoe at work among crops of all kinds.

April.

Earth up and stick peas. Seeds of sweet and pot herbs that still remain unsown must be got in at once. Those sown in heat should be pricked off into small pots or cold frame, to well harden off before planting out. Prepare trenches for celery, and put at least six inches of good rotten manure in the bottom, and just cover with soil. The spaces between the rows may be occupied with lettuces and radishes. Seakale for forcing can be raised in one season, if the small side-roots, or "thongs" are now planted in rows in good rich soil. All salading, such as lettuce, endive, and radishes, must have rich soil after this season, otherwise they will make a slow growth, and be of little value. Potatoes in heavy cold soils must now be planted. Protect early kinds now peeping through the ground, by drawing a little soil over them.

#### FRUIT GARDEN.

Pruning ought to be finished before this. Continue to protect peaches and nectarines; care, however, must be exercised, so that the young growth is not drawn weak and spindly through too thick a covering. If blinds of tiffany or canvas are used, roll them up during the day, but where branches of fir or fern are used, about half the quantity should now be taken off. Thin out apricots, and isbud; but proceed cautiously and gradually, so as not to produce too great a check.

#### GREENHOUSE AND CONSERVATORY.

Plants of all kinds will now require increased supplies of water, those in flower must not be allowed to suffer for the want of this element, or the flowers will soon drop. Sow primulas and cinerarias for early bloom, and place the seed pans in a shady corner until the plants are up. *Lilium auratum*, and the varieties of *L. lancifolium*, will now require plenty of water. Place in a cold frame, where they can be freely exposed to the air, previous to being placed out of doors next month. *Cytisus* should be pruned into shape immediately they go out of flower, and directly they break, be repotted. Autumn-struck and old plants of fuchsias will require shifting into larger pots. Keep the whole of the plants in a brisk growing temperature, well syringed and pinched, as required.

#### VINERY.

The shoots of the vines in the late house are generally very brittle early in the day, therefore the training of these should not be done until after the sun has been shining upon them for three or four hours, which will make them more pliable, and less likely to snap off. In the other houses, stopping and regulating the shoots must be done as circumstances demand; it is bad practice to stop during the time the grapes are stoning. Thin out before the berries are crowded in the bunch, and avoid cold currents of air passing over them. Cold chills at this period of their existence are very frequent causes of "rust." The inside borders must not, on any account, be allowed to become too dry; examine them two or three feet below the surface.

#### STOVE.

Maintain a thoroughly moist atmosphere by throwing plenty of water on the floor. Shut up early, and use as little fire-heat as possible. Train specimen plants of a climbing habit as fast as they make new growth, to prevent their getting out of form. All the plants that require a shift must have it at once, as better growth will be made in the fresh soil than in that which is now worn out; syringe freely.

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GARDEN STICKS AND LABELS are in constant request in the gardens of all classes, and as a great saving of time and labour is effected by purchasing them ready made, we shall be doing good service to our readers by reminding them that Messrs. Blackith & Co., Lower Thames Street, E.C., have constantly on hand a very large stock of these articles. The sticks may be had in various lengths, ranging from one to five feet, and the labels from four to eighteen inches in length; and after considerable experience with them we can strongly recommend both labels and sticks for their cheapness, neat appearance, and excellent quality.

## HORTICULTURAL AFFAIRS.



THE ROYAL HORTICULTURAL SOCIETY held its first exhibition of spring flowers on March 15. The subjects invited by the schedule comprised Hyacinths, Tulips, Lily of the Valley, Cyclamens, and other seasonable subjects; and as the prizes in the several classes were well contested, a very beautiful and interesting display was the result.

THE ANNUAL DINNER OF THE FINDLEY CLUB took place at St. James' Hall, Regent Street, on the evening of Wednesday, March 15, when Mr. A. F. Barron, Gardener in Chief to the Royal Horticultural Society, was entertained as the chief guest, in recognition of the great services he has rendered to practical horticulture. The chair was occupied by Mr. Shirley Hibberd, and about fifty of the leading horticulturists sat down.

THE INTERNATIONAL POTATO SHOW for 1876 will be on a more comprehensive scale than that of 1875. The schedule may be obtained on application to the Honorary Secretary, Peter Mc Inlay, Esq., 23, Upper Thames Street, London, E.C.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The thirty-third anniversary dinner is fixed for the 30th of June, when the chair will be occupied by Dr. Hogg.

*COLCHICUM SPECIOSUM*, the grandest of the tribe, appears as a trade plant in the newly-issued supplement to Messrs. Backhouse and Sons' Catalogue of Alpine Plants. The flowers of this *Colchicum* are of a soft rosy pink colour, and measure seven inches from tip to tip.

ROSES THAT HAVE BEEN CATALOGUED, NUMBER ABOUT 5200, according to the statement of M. Schwartz, the eminent rosarian, of Lyons.

THE EXHIBITION AND CONGRESS TO BE HELD IN AMSTERDAM IN 1877 is in process of being definitely organized. So far as the programme is prepared, it indicates an intention on the part of the promoters to secure a large exhibition of a comparatively restricted number of raw materials and manufactures. The Secretary is Mr. H. Groenewegen, 5, Oudewaterweg, Amsterdam.

A MARECHAL NIEL ROSE with 500 yards of mature growth, and now growing at the rate of two yards of wood per day, may be seen in Mr. Harrison's nursery at Darlington. It is budded on the Napoleon stock, described in these pages, by Mr. Taylor, some time since. The stock originated with Mr. Harrison, and as yet is not in commerce.

THE TILE-CULTURE OF POTATOES, introduced to public notice in Mr. Hibberd's lecture on Potato Culture at the Society of Arts, February 25, 1874, has been tried and varied by several cultivators. The latest variation is described by Mr. Pink in his pamphlet lately published by Messrs. Ridgway, Piccadilly. At page 10 the author says, "A small experiment in the form of artificial drainage was carried out with Brownwell's Beauty, twenty sets in rotation being alternately placed on inverted flower pots (24's), the pots being sunk to the requisite depth. When lifted, those grown on the pots were found to be of better shape, and averaged about half a pound per hill more than the alternating sets planted in the usual way.

"WEINER OBST UND GARTEN ZEITUNG" is the title of a new and nice-looking monthly paper devoted to the affairs of the orchard and the garden, under the joint editorship of A. W. Freiherrn von Babo and Dr. Rudolph Stoll. The publishers are Faesy and Frick, of Wien.

THE KING OF THE BELGIANS is erecting at Laeken a grand winter garden close to the palace, which adds considerably to the effect of the whole building. This new garden is surrounded by a wall about 80 yards in diameter, and covered with a roof about 120 feet in height, so skilfully constructed as to need no support in the centre. The cost of the building is estimated at £80,000.

TWENTY NEW DOUBLE-FLOWING PELARGONIUMS are announced as ready for distribution by M. Alegatiere, of Chemin St. Priest, Monplaisir, Lyons. Of these, five are M. Alegatiere's raising, six are Lemoine's, five Rendatler's, and four Bruant's. Collectors of double zonals will find much to interest them in M. Alegatiere's list.

ENGLISH ORCHARDS AND MARKET GARDENS.—From a Parliamentary return just issued we glean the following details relating to the quantity of land cultivated as Orchards, Market Gardens, Nurseries, and Woods in Great Britain. The grand total

in acres is as follows :—Orchards, 154,584 ; market gardens, 38,957 ; nursery grounds, 12,042 ; woods and coppices, 2,187,078. The counties in England whose acreage in orchards exceeds 20,000 acres are Devonshire, Herefordshire, and Somersetshire ; those whose acreage is over 10,000 are Gloucester, Kent, and Worcester. The acreage for market gardens is largest in Middlesex, viz., 5221 acres. Essex comes next, with 4110 ; then Kent, 4028.

A DOUBLE EPACRIS, exhibited at South Kensington on March 1, by Mr. William Bull, may be considered the most striking novelty that has been brought before the Society for some time past. It is a variety of *Epacris Onosmaeflora*, and the flowers are perfectly double, exceedingly neat, and pure white.

WITLOOF, a form of the common chicory, which has long been held in high repute by the Belgians and Dutch as a salad, has recently been introduced to English gardens. Samples grown at Chiswick from seed presented by Messrs. J. Carter & Co., were exhibited at a recent meeting of the Royal Horticultural Society, when the fruit committee were unanimous in awarding it a first-class certificate. The roots are much larger than those of the ordinary chicory, and the leaves are very thick and fleshy and delicately flavoured. It quite supersedes the common chicory of the gardens as a salad, and we would strongly recommend its being grown in preference to it.

## APRIL EXHIBITIONS.

5.—ROYAL HORTICULTURAL SOCIETY.—*Fruit and Floral Committees*, 11 a.m.; *Scientific Committee*, 1 p.m.; *General Meeting*, 3 p.m.

5.—ROYAL CALEDONIAN HORTICULTURAL SOCIETY.—*Exhibition of Spring Flowers*.

12.—ROYAL AQUARIUM, WESTMINSTER.—*Exhibition of Forced and Spring Flowers*.

19.—ROYAL HORTICULTURAL SOCIETY.—*Exhibition of Spring Flowers. Fruit and Floral Committees*, 11 a.m.; *Scientific Committee*, 1 p.m.; *General Meeting*, 3 p.m.

25.—MANCHESTER BOTANICAL SOCIETY.—*Exhibition of Auriculas and Spring Flowers in the Town Hall*.

26.—ROYAL BOTANIC SOCIETY.—*Second Spring Show*.

27.—ROYAL HORTICULTURAL SOCIETY OF IRELAND.—*Exhibition of Spring Flowers*.

30.—BRUSSELS INTERNATIONAL HORTICULTURAL EXHIBITION.—*Opening Day*.

## TO CORRESPONDENTS.

EUCALYPTUS GLOBULUS.—*N. B. F., Thornton Heath*.—"Special attention" is not, so far as we are aware, paid to the cultivation of the Eucalyptus by any of the English nurserymen ; but plants may be obtained at the principal metropolitan nurseries. Seed may also be procured at the chief seed houses, Messrs. J. Carter and Co.'s, for example.

*B. Tracey*.—Grape Vines cannot be successfully cultivated in a plant stove, because of the impossibility of affording them, during the autumn and winter, the rest so essential to their well-being. The vines from the time of ripening their crop in the autumn, until started into growth again, should be kept quite cool ; but in your case, it will be necessary for the sake of the plants to maintain a comparatively high temperature throughout the year. We would recommend you to train a Stephanotis, or some other good stove climber, over the roof in preference to the grape vines ; but if you determine to have the latter, the Muscat of Alexandria may be mentioned as one of the finest grapes for a house in which a high temperature is maintained. If the vines could be planted in an outside border, so that the canes could be taken outside the house after the fruit has been gathered, and allowed to remain outside until a month or so after Christmas, fairly good crops may, with skilful management, be obtained. The canes, when outside, must be enveloped in



hay bands after the end of November, for exposure to severe frost may result in considerable injury to them. When the canes can be removed from under cover, the Black Hamburg is preferable. The *Yucca* mentioned usually produces its flower-spikes in the autumn; and if you are desirous of preserving the freshness of the flowers until the last, protect the spikes from frost by means of canvas, or some other light covering. The season of flowering is not under the control of the cultivator.

*M. S.*—We are not acquainted with the plant referred to, and are therefore quite unable to assist you.

GARDENING UNDER DIFFICULTIES.—I should be glad to hear your opinion of the following case:—I have under my charge a piece of land—kitchen garden—which is somewhat peculiarly situated, being surrounded on the south by a bank of sand and chalk 130 feet high, on the east by a continuation of the same bank, 150 feet high, on the west by the same bank, 70 feet high, crowned by a thick belt of trees, and lying open on the *north only*. The land is in extent about a quarter of an acre, and consists of one part pebbly chalk, one sand, and two parts of dirty black clay. Last year it was well trenched and manured, and cropped with peas, beans, savoy, and parsnips: the two former were a total failure, and the two latter very poor. I am at a loss to conceive what course to adopt with the land, so as to render it productive, and I shall therefore be glad if you or any of your subscribers can give me any assistance. I may add that the upper soil is only two feet in depth, having as foundation a bed of chalk. In summer the place is like an oven, and in winter like an icehouse.—*H. J.* [The land is injuriously hemmed in and the quality is bad, but last year was not a good test of its capabilities, for in very many better places peas and beans failed. The following will probably give you fair returns for your labour—potatoes, vegetable marrows (aided with manure and water), New Zealand spinach, kidney beans, tomatoes, maize (for cooking green), onions. The land is not suitable for brassicas, or celery, or peas. You might try cucumbers and melons on ridges, with a fair prospect.]

LOMARIA GIBEA.—*J. H. C.*—This fine fern requires good stove culture, and will not look well for any length of time by any makeshift method. A little sun will not hurt, nor, indeed, will a little sun hurt any fern except it be one of the hymenophyllum or trichomanes class; but it loves shade, and must have warmth. Having given your plant a shift, we advise you to leave it undisturbed all through the coming season, and to let it have the warmest place that can be found for it with shade and atmospheric moisture. Towards the end of the summer it may have abundance of light and air with advantage, but should be encouraged to make a free growth first.

*H. H. R.*—One of the shoots of the *Cissus* produced last year should be pruned back to where quite firm, and a young shoot trained along the roof in the desired direction. The brown rooty substance is natural to the plant referred to. The *Polypodium* should grow freely in the position mentioned; possibly there is not a sufficient depth of soil, and the plant is in a starved condition in consequence. *Eranthemums* may be obtained at all the principal nurseries, and probably you may be able to obtain the species mentioned in your letter by making inquiries of some of the nurserymen in the metropolis. Iron stakes are in every way suitable for rose trees. *Selaginella apoda* is very difficult to keep in first-class condition through the winter, because of its liability to damp off. It should be kept comparatively dry from October to March. *Selaginella involvens* and *S. helvetica* are perfectly distinct. The former is of a decumbent creeping growth, and the latter is rosulate.

APONOGETON DISTACHYON.—*F. H. S.*—This pretty aquatic is of the most simple culture, and although it grows vigorously and flowers abundantly in the greenhouse or stove, it is quite hardy. We would, however, advise you to grow it in a large flower-pot, made water-tight, or in a deep pan, and place it out-of-doors during the summer, and in the winter remove to the greenhouse, when it will continue to produce its flowers, but of course less freely than when vegetation is more active. It should be put into pots of a size proportionate to the size of the individual plants, with good turfy loam to root into. When potted place them in large flower-pots that have been made water-tight, or in pans deep enough to allow of about six inches of water above the rim of the pots. If the pans are very deep, it will of course be easy enough to bring them near the surface by standing them upon inverted flower-pots. Of course the pans could be only partly filled, to bring the

base of the plants to within a proper distance of the surface, but that course is not desirable, for they do not appear to such advantage as when the vessels are quite full. The flowers are pure white, with black anthers, and are very fragrant; they, in common with the leaves, float upon the surface of the water.

**MYRTLES.**—*Miss F.*—The myrtles that have become thin for some distance above the surface of the soil should be pruned hard back to promote a new growth from the lower part of the plants. Even the oldest shoots will break freely and produce strong shoots, and if the new growth is thinned out where over-crowded, and any shoots that may be growing more vigorously than the principal portion stopped as may appear desirable, the plants will soon attain a large size, and be densely furnished with healthy growth nearly to the rim of the pot. The shoots should, as a rule, be pruned to within about six inches of the surface of the soil, and when this has been done, place them, if convenient, in a cucumber pit, or wherever they can be kept rather close, moist, and warm, to encourage them to break freely. Until the new shoots are half an inch or so in length, they must have very little water at the roots; the soil, in fact, to be kept just moist and no more. But when reaching this stage, turn them out of the pots and reduce the ball of soil sufficiently to allow of their being put into pots two sizes smaller than those previously occupied. When this has been done they must be placed in a frame and kept close and shaded, and be syringed overhead occasionally, to assist them to become established quickly. Myrtles will break freely when standing in the greenhouse, or in an ordinary pit, but by placing them in warmth they start into growth sooner, and attain a considerable size by the autumn. Plants that are simply out of shape through a portion of the branches being larger than the others, may soon be set right by pruning the projecting branches back sufficiently to give the plants an uniform appearance. If a strong growth proceeds from these, it will be an easy matter to check it with the finger and thumb. Few shrubs bear the knife better than the myrtles, and no season of the year is more favourable for pruning them than that embraced by the months of March and April.

**CYRISUS.**—*B.S.*—If you are desirous of keeping the plants for flowering next year, prune them moderately as soon as the beauty of the flowers is passed, and when they commence to break freely shift them into pots one size larger, and early in June place them out-of-doors for the summer, and supply liberally with water. A rather shady position is the most suitable, provided they are not placed under trees. A mixture of turfy loam, leaf-mould, and silver sand will form an excellent compost. Peat is sometimes recommended for these plants, but they do better without it.

**ASTILBE JAPONICA.**—*Young Gardener.*—This useful decorative plant, which is known also as *Astilbe barbata*, *Spiræa japonica*, and *Hoteia japonica*, may be cultivated as successfully in this country as in Holland, from whence the market growers and the trade generally obtain their annual supplies of crowns for forcing. The trade in all probability finds it as advantageous to import the crowns as to grow them at home, but there is no great reason why you should not preserve the plants you have for flowering next year. The stock may indeed be increased considerably if it is so desired. The plants must not be removed directly from the conservatory to the open air, as the change would be too much for them, and they would suffer in consequence. Therefore, when they no longer contribute to the beauty of the conservatory remove them to a cold frame and supply liberally with water. About the middle or the end of May, plant them out on a piece of ground that has been deeply stirred and has received a moderate dressing of manure; and put the plants about fifteen inches apart one way and thirty inches the other. Until they become established water them freely, and throughout the season keep the bed clear of weeds. If it is desired to increase the stock, divide each plant into two portions before planting, and injure the roots as little as possible. By the autumn the plants will have become well developed, and you will have a good supply of strong crowns for forcing. It will be of little use to plant them in poor soil and leave them during the summer to practically take care of themselves, for they will not acquire sufficient strength to bloom satisfactorily.

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ANEMONE FULGENS.

## BORDER ANEMONES.

(With Coloured Illustration of *Anemone fulgens*.)

THE only anemones that are well known in gardens, are those of the florist section, which are to some small extent grown for exhibition. These are popularly known as Poppy anemones, the botanical name of the species being *Anemone coronaria*. We have treatises on the cultivation of this fine plant from the pens of Mr. Carey Tysoe, and others, and there is not much room left for disquisition on the subject, but we may always take advantage of any proper reference to it, to say that as border flowers—irrespective of exhibiting—the poppy anemones are deserving of more extended cultivation than they obtain. An amateur who would have a more varied floral feast than geraniums and verbenas are capable of furnishing, might do well to appropriate an odd patch of ground in a sunny spot to a small collection of show anemones and ranunculuses. They require only a good loamy soil, and to be planted in September or October, and in due time they will present their glorious flowers. But they may also be dotted about in clumps in a herbaceous border, and will very well take care of themselves if the border is not systematically dug. The digging of borders so ruthfully destroys herbaceous plants, that those who allow their borders to be dug, should never plant anything good in them. The main secret of having a good herbaceous border is to dig deep and manure liberally in the first instance, then plant judiciously the finest herbaceous plants attainable, and for several years afterwards forbid the spade to be taken near it. Weeds must be pulled out of course, and little careful touches with a small fork or hoe, may be made for the sake of keeping all tidy, but sheer digging is sheer destruction, and hence where digging is permitted, the borders are destitute of flowers nine months out of twelve, though they may be gay with bedders the remaining three.

Border anemones, in common with most other border flowers, should be left undisturbed for several years. The best of them are among the best of garden plants, but there are many species in cultivation that are comparatively unattractive, and therefore we shall not recommend them. Amongst those that we value much, we shall give first place to *Anemone fulgens*, which is here figured, and as regards its beauty can speak for itself, although its voice is weak in its own praise when it speaks from printer's ink instead of nature's fresh transparent colours. This, the Scarlet Windflower of gardens, is a native of the south of Europe, and requires a somewhat sheltered situation, and a decidedly well-drained soil, when cultivated as a border flower. Another lovely plant to associate with it, and especially adapted for the front of a rockery, is *Anemone stellata*, which has star-shaped flowers of various colours, red, purple, white, and blush. The scarlet and purple varieties are brilliantly beautiful. At the moment of writing this, we have

flowers of both on our table, gathered from tufts that have for several years thriven on a border facing east, where the keen winds of March and April would surely destroy them if they were not thoroughly hardy, but they have never injured the stellate anemones. Less showy, but not less beautiful, is the double variety of the pure white *Anemone nemorosa*, which makes a charming pot plant, and is quite a gem for the rockery. The single wild flower grows on the banks in our wild garden, and we sometimes wonder why we should think more highly of the double variety in the border; still, a double flower is a double flower, and if in this case—as in very many others—we lose the simple elegance of the wild form, we obtain in place of it a plant that offers us now a great cluster of most beautiful white rosettes. The Apennine Wind-flower, *Anemone apennina*, with its sky-blue flowers, is another valuable border plant, but can scarcely be kept where slugs and snails abound, owing to their ill-mannered taste for eating it. When these marauders leave it alone it brings out a glorious sheet of blue flowers in the spring, and looks as if a bit of the blue sky had come down to find a cushion of green leaves to rest upon.

Later in flower than the foregoing, we have *Anemone alba*, the flowers of which have been justly likened to those of Clematis Montana, and *Anemone alpina*, with white or yellowish flowers. These are fine border plants, and they exhaust our list of select species, save that we have a great gun in store with which to wind up. This is the well-known *Anemone Japonica*, with rosy purple flowers, which appear in September, and make a very stately figure in the border. Better however than the normal purple form of the plant is that variety of it called *Honorine Jobert*, with flowers of the purest white, produced in great profusion, lasting from early in September until November frosts cut them down. The Japan anemone is a glorious border flower when left alone for several years; all it wants is a bit of common loamy soil, and a little shelter from winds, because it flowers at a time when storms prevail.

For those who want collections of anemones, there are plenty to be found. But our object is not, and never has been, to crowd the gardens of amateurs with plants of second or third-rate merit, for writers who trot out unattractive plants do harm, though they may intend to do good, and so it is part of our plan to name a select few, rather than run to the opposite extreme of naming too many.

In one respect all the anemones agree. They like a good, deep, moist soil. A dry, sandy soil does not suit them. But they also require perfect drainage and some amount of shelter, hence it is not advisable to plant them in exposed situations. S. H.

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A TUBULAR-LEAVED STRAWBERRY.—M. Dutailly has recently described before the Linnean Society of Paris a case where the leaflets of a strawberry were tubular, forming small pitchers like those of a Sarracenia. There was no fusion of the margins in this case, but simply an exaggerated condition of a peliote leaf. The author speculates on the probability of the production of a race of these pitcher-bearing Strawberries.

## ON THE LAYING OUT OF SMALL GARDENS.

BY JAMES CRUICKSHANKS.

(PRIZE ESSAY CONTRIBUTED TO THE MASSACHUSETTS HORTICULTURAL SOCIETY.)



THE principles upon which Landscape Gardening is founded are intended to produce unity of design with harmony in execution, and also picturesque beauty, and where these are not combined, the grand object in view is not attained.

It is necessary to consider the location of the house, with all its surroundings, the size of the place, also the views to be obtained from it; whether they are distant or circumscribed, of wood or water, tame or romantic, of mountain or meadow, of sea or land. An estate commanding wide views requires very different treatment in the arrangement, from one where the house is imbedded in a forest, with only space enough to get a small lawn, and consequently without distant views. In forming the component parts of a good landscape, much also depends upon the character of the scenery in view; for if the sea can be seen on the one side, and a mountain on the other, the planting would require to be bolder and more decided than if the only views to be obtained were a meadow with its flocks and herds.

These different circumstances would require to be borne in mind by any one who undertakes such work as the laying out and decorating a suburban residence in the style now practised in landscape gardening. Much may be learned by the attentive observer from studying the natural forests, whether on meadow or mountain side, the natural groups being, in many cases, so arranged as to give the landscape a very pleasing effect, so that little improvement could be made by the most skilful artist.

The first thing that requires attention is to have the ground properly drained and subsoiled, and afterwards well dug over and enriched; also to have the places marked off for groups of trees which it is intended to plant. The surface must be made fine, and you will then be ready to sow the grass seed, and must be sure to procure the best mixture to produce a good lawn.

It is difficult to give a design for any supposed place, as almost every one differs somewhat from its next neighbour; but assuming the ground to be nearly level, or slightly undulating, with a public road in front, and rather sloping to the road than otherwise, placing the house about two-thirds of the depth of the property towards the back, will give a good opportunity to have the necessary buildings, such as the stables, carriage-house, etc., behind the mansion, where they can be shut out from view, if desired, by irregular groups of planting, which could lap over each other, and thus secure privacy. This arrangement would afford space for a fine lawn in front, with small, irregular clumps of trees and flowering shrubs near the road, making the lawn look as large as possible, and giving views of pleasant objects beyond.

The house being located as above stated, and say, about one-fourth of the width of the ground from either side, with an easy, curved avenue from the road, such an arrangement would give a good opportunity to get a small kitchen garden and orchard at the back of the house, with a greenhouse and grapery running about parallel with the house, and a flower garden in front of them, flowering shrubs and low evergreens forming a boundary between the flower garden and the lawn. Anything that was unsightly would thus be kept out of view, and at the same time everything required could be conveniently located.

The flower garden being a distinct department, the best effect will be produced by cultivating in it principally florists' flowers. The beauty of a lawn is lost in a great measure by introducing clumps of bedding plants through it, however artistically they may be arranged; nothing pleases the eye so well as the pure, green grass, with here and there a handsome ornamental tree judiciously located.

The buildings and drive being thus disposed of, the next thing requiring attention is the planting of the boundaries in such a manner as to afford sufficient shelter on the north and west sides, these being the quarters from which our heaviest gales come, but without giving it too formal an appearance, and at the same time taking advantage of all the most desirable views that can be obtained, and this can only be accomplished by judicious grouping.

The same may be said of the south and east sides, although they may not require to be so densely planted, unless it be to hide some unsightly object; but where a view of the sea, or the bold outline of a mountain can be obtained, the landscape gardener should be sure to take advantage of them. In planting, avoid straight rows, and let the outlines of groups be sinuously diversified, taking care to arrange the trees and shrubs according to their size and colour, keeping the tallest at the back, and the lightest shades of foliage on the most salient points. Small groups of ornamental trees and shrubs may be judiciously planted through the most distant parts of the lawn; but generally, single trees are all that will be required on a small place, such as the different varieties of magnolias and double thorns, *Virgilia lutea*, tulip trees, deciduous cypress, purple beech, etc., for deciduous trees; and for evergreens, Austrian pines, Cembran pines, and the various species of *Retinisporas*, with many others that might be named.

This gives a general idea of my system or plan for any such work as the above described; but the design must be varied according to circumstances, different locations, as before remarked, requiring different treatment, and the size of the place being also an important element for consideration.

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A YELLOW SELF AURICULA of splendid quality has been raised by the Rev. F. D. Horner, of Kirby Malzeard, Ripon. The flowers are perfectly circular, and remarkably smooth. It is said to have been raised from seed saved from a green-edged flower. The old double yellow Auricula was recently exhibited at South Kensington in fine condition, by Mr. Richard Dean, of Ealing.



## CULTIVATION OF DAHLIAS FOR EXHIBITION.

BY GEORGE RAWLINGS,

Dahlia Nursery, Old Church, Romford.



O an old cultivator of dahlias like myself, it is especially gratifying to be able to feel that these flowers are fast becoming extremely popular, and are again held in high estimation by all classes of the community. From thirty to forty years ago they were, perhaps, the most popular of all the florists' flowers grown in the open borders, and it was not an uncommon occurrence for some eight or ten thousand people to attend an exhibition consisting exclusively of them; but from various causes their popularity began to decline about twenty-five years since, and for many years they were under a cloud. Their decline in popularity may be said to have commenced about the same time as the bedding system, which now so largely prevails, was first introduced; and as the adoption of this system became general the dahlias were pushed out of the borders, where they had so long occupied an honourable position to make way for the masses and lines of scarlet, yellow, and other distinctive colours. But now a healthier state of things prevails, and those who have gardens are fast becoming aware of the fact that, after all, a mixed border well arranged possesses much interest, and is capable of adding materially to the attractiveness of the garden. In consequence of this, the dahlia again occupies the position it so well deserves.

My object in writing this is not, however, for the purpose of advocating the more extended culture of these flowers for garden decoration, for that was well done by one of your old and most esteemed correspondents in the *FLORAL WORLD* for March last. I might add that they form one of the most valuable classes of autumnal flowering plants we have, for they are very attractive, and continue to produce their richly-coloured and symmetrical flowers until cut off by the frost in the autumn. My intention on the present occasion is simply to offer a few hints and suggestions on their cultivation for exhibition purposes, and in so doing I hope to be able to place the amateur in a position that will enable him to produce blooms of first-class quality without any great difficulty. I hope, at all events, after making the dahlia my special study for a period of between thirty and forty years, to be able to say something that will be of service to the inexperienced amateur.

**PREPARATION OF THE SOIL.**—In the first place it is necessary to say that plants intended for the production of blooms for exhibition should, if practicable, be planted in a border by themselves. When intermixed with other things, it is difficult to give them the little attentions so necessary to ensure success without injury to those things with which they are associated. As a rule, the finest blooms are produced in moderately deep and well-drained loam; but the cultivator need not trouble himself much upon this point, for by judicious preparations there are not many soils in which good blooms cannot be produced. Deep digging is a prime necessity, as also is

May.

liberal manuring, for by these means the most unsuitable soils can be made fit for the reception of the plants. If a quarter that was manured in the autumn, and then trenched or dug over deeply, can be set apart for the dahlias, it should be taken advantage of; but if they have to be planted in a quarter which has not undergone such preparation, it must be dressed with manure and dug over without delay. Old hotbed manure, such as would be obtained from a cucumber-bed made up last year, would be the most suitable. The dahlia is, in no sense of the word, a delicate plant, and, as a matter of fact, manure quite green may be employed in its cultivation, especially on poor thin soils, where it is difficult to insure for it a good root-hold; but I would not, of course, advise those who have a good loamy soil to deal with to use rank manure, but on a pinch it may be done, and the plant will be none the worse for it.

**WHEN AND HOW TO PLANT.**—In referring to the proper time for planting the general stock, it appears desirable to caution the cultivator against the mistake which is frequently committed of planting before the weather is settled. By planting too soon, you incur the risk of having the plants injured by frost or cold windy weather; but in keeping them in pots until the weather is sufficiently settled to admit of their being planted with safety, you incur no risk at all. There is no doubt a considerable amount of work in keeping a stock of dahlias in pots well supplied with water during the month of May, and to avoid this the growers are naturally anxious to plant out as soon as possible; and frequently they allow a few days of genial weather to induce them to plant before it is safe to do so. To keep them out of the ground longer than necessary would be simply to lose most valuable time, and I will at once say that the fortnight commencing with the last week in May and ending with the first week in June is the most suitable for planting operations.

During the whole of the time I have been in business, I have sent out dahlias in two-inch pots, and the system answers perfectly, for a fair-sized and thrifty plant may be made in that sized pot; and the cost of carriage is considerably lessened to customers. It would be well, however, for the amateur to give his plants a shift as soon as they come to hand, and large sixties or common forty-eights will afford them plenty of pot-room until the time comes for planting out. The compost should consist of turfy loam and rotten dung, with a little sand—there is no occasion for leaf-mould. As remarked above, the dahlia is not a delicate plant, and it is sheer waste of time to prepare an elaborate compost for it.

It is most convenient to plant in rows; and to afford sufficient space for attending to the plants and preparing the flowers without, on the other hand, wasting the space, let the rows be five feet apart, and the plants four feet from each other in the rows. In planting, take out two or three spits of the soil where each plant is to be put, and replace with fresh loam and well-decayed manure. Before planting drive in the stakes, and sow lettuce-seed over the whole piece. The cost is nothing, the result will be a supply of lettuces, and so long as the ground vermin can get lettuces they will not touch the newly-planted dahlias. It may be more convenient to

plant lettuces at the same time as you plant the dahlias, and that plan will answer as well as sowing seed. When planting have at hand a little fresh dry lime in powder, and give every plant a slight dusting; and also sprinkle lime on the soil in a circle round the little plant, taking care not to leave a gap in the circle for a slug to crawl through. Repeat the liming after every shower until the plants are a foot or so high, when the slugs will no longer care to touch them. Three weeks after planting put on a good surface dressing of short dung, and prick it in all over the piece. This will be of immense service, both for promoting a healthy growth and to keep down vermin.

**STAKING AND TRAINING.**—As remarked above, the stakes should be inserted before the plants are put out; but if this is neglected, they must, of course, be put in afterwards. In which case, to prevent injury to the roots, drive the stake in at a distance of three or four inches from the stem. I have for many years practised a system which benefits the plants, and insures to them more perfect protection against gales of wind, while it renders them more pleasing in appearance than the old-fashioned way of allowing every plant to attain its full stature. It consists in bending them down, so that the stems run for a short distance on the ground and then turn up, and are secured to short stakes. This system may be prepared for by bending down the stem while it is pliable, and then securing it to two stout pegs; but if the stem has got somewhat firm, a dexterous twist will bring it down without injury, and the tying will follow as a matter of course.

**WATERING.**—Water liberally when newly planted, to settle the soil about the roots; and if the weather happens to be dry, sprinkle them overhead in the evening, and apply water to the roots as may appear necessary. Dahlias require a liberal share of moisture; nevertheless, it is not good practice to thoroughly saturate the soil at the commencement of the season. By the second or third week in July the plants will have become thoroughly established, and the soil will be full of roots. Consequently larger supplies of moisture will be required, and during periods of dry weather it will be necessary to water liberally once or twice a week, according as the soil may be heavy or light. Soft water, such as may be obtained from a pond, is preferable until the necessity for applying stimulants arises. Rain or river water is also suitable, but that from deep wells is the least to be desired, because of its coldness and hardness. The beginning of August is a most suitable time for commencing the use of liquid manure, and if applied twice a week the plants will receive ample assistance. The drainings from manure-heaps and stables will be the most suitable, and if it can be allowed to run into a tank and be diluted with an equal or double quantity of water, according as it comes from the manure-heap or stable, it will be more convenient; but in any case it will be necessary to dilute it, and at all times due care must be taken to avoid wetting the foliage with it.

**THINNING AND DISBUDDING.**—It is not advisable to thin the plants severely, but, as there is generally more growth than we require, systematic thinning must be resorted to. I like to see a

plant with at least six shoots from the bottom, each shoot secured to a good stake. I would allow eight or ten shoots if I could, and count upon a few good blooms from every shoot. A certain amount of thinning upwards will generally be required, but, as the varieties differ in habit to some extent, and soils and seasons influence the growth, the cultivator must use a little judgment. I advise him to make sure of a good plant, and to thin too little rather than too much if in doubt about it, taking care, of course, to thin sufficiently to insure a free circulation of air amongst the branches.

Generally speaking, the plant produces more flower-buds than it can bring to perfection for the quality we desire. But the operation of disbudding requires judgment. The beginner who does not see his way any way may safely remove all the buds that are produced, save and except the centre bud of every group. As the buds usually show themselves in threes, this system removes two-thirds of the whole crop, and the remainder suffices for a good display. As experience is gained, it will be found that varieties characterized by the production of thin flowers may be disbudded as soon as the buds are fairly visible; for, strange to say, the result of the operation is the thickening of the flowers that are allowed to develope. In the case of doubtful kinds, and especially such as come "cross-eyed," it is well to wait for a bud with a "pin hole," that is, a visible aperture in the centre. This pin-eyed bud will produce a good flower; therefore keep it, and remove those that are cross-eyed. Those with "hard" eyes must be very slightly thinned, for by allowing them to perfect a number of flowers we reduce their vigour and improve their eyes—the hard eye being the result of a superabundance of stuff in the flower. The hard-eyed sorts should be planted as early as possible.

**SHADING THE FLOWERS.**—It is impossible to put up a good stand of dahlias unless some amount of shading is resorted to. But shading in dahlia-culture is one of the fine arts, and the amateur must give his mind and his hands to it, if resolved to cut flowers that shall bring him honour. The shades I have always preferred consist of painted calico on wire frames, and there is any amount of wear in them. It will be a nice point with the amateur to determine how long to shade a flower; and, to initiate him into the mystery, I will suppose we have before us a swelling bud of a tipped variety, and we wish to insure a grand flower. To be in a hurry to shade will spoil it, for we want the tips well coloured, and the sun is the painter of the flowers. We will therefore wait until two rows of petals are down, and then put on the shade to promote the purity of the light tint which contrasts so pleasingly with the richly-coloured tips. In August, a bloom will come to perfection in three or four days after the first row of petals are down, but at the end of September it will take a week.

**STAGING THE FLOWERS.**—In selecting the blooms for exhibition, take those only which are well up in the centre, the eye well covered, and the petals and florets uninjured. If there is a choice of blooms of any of the varieties possessing these essential qualities, the largest and most pure in colour should be selected. The evening or early

in the morning is the best time for cutting; and if there is any probability of a heavy rain during the night preceding the exhibition, they should be cut in the evening. One of the most essential points is to tastefully arrange the colours, and to keep the light flowers towards the outside of the stand; the largest blooms must be put in the back row, and as far as is practicable, the finest blooms should be distributed regularly over the stand.

SELECTION OF VARIETIES.—For the names of the best varieties, it will suffice to refer my readers to pages 92 and 93 of the March number of the FLORAL WORLD, for a better fifty show flowers, or a better thirty fancy flowers than those enumerated could not be had.

## THE BEST BEDDING GERANIUMS.

BY JOHN WALSH.



SEVERAL very excellent selections of geraniums adapted for bedding purposes have appeared in the pages of the FLORAL WORLD within a comparatively recent period; nevertheless it is again necessary to revert to these flowers because of the constant influx of new varieties.

During the last two years the number of new geraniums distributed has been very small, as compared with previous years, yet several notable additions have been made to the already lengthy list, and the majority of these are eminently suitable for the decoration of the flower garden. The list of pink bedders has been materially strengthened, and instead of its consisting of two or three that are thoroughly reliable, and several that do moderately well in some places, and fail in others, it comprises not less than a dozen that are most effective in colour and sure to do exceedingly well in ordinary soils and situations. A most marked advance has certainly been made in the pink varieties, and as they produce such a pleasing effect in combination with those bearing scarlet flowers, they should be planted more extensively than in the past. The White Zonals are not as yet so satisfactory as could be wished, and it may not be amiss to suggest to raisers that more attention should now be paid to their improvement. To afford the amateur all the help possible, I shall make the selection as brief as the exigencies of the case will admit, and I shall separate the sorts into two distinct classes, one to comprise those most suitable for heavy soils, and the other such as succeed satisfactorily on soils of a light character. This separation, to my mind, is very important; for the weak growers that do well on heavy soils become starved on those light in texture; and the strong growers which make a grand display on soils of the latter class, grow with tremendous vigour, and fail to bloom satisfactorily, when planted in strong loams or clays.

I will first speak of the varieties specially suited for light soils, and those whose gardens rest upon sand, gravel, or chalk, may plant them with the full assurance of their producing a splendid display.

May.

At the head of the list I shall place *Corsair*, which is not only one of the best bedders, but it is one of the grandest zonals for pots we have; the flowers are brilliant scarlet, destitute of an eye, and of splendid form, and produced in immense trusses. *Star of Fire*, rich orange scarlet; *Soleil*, light orange scarlet; and *Bonfire*, crimson scarlet, form a trio of nosegays that cannot be equalled for bedding on light soils. For brilliancy in colour and distinctness they cannot be surpassed. *Lady Kirkland*, dark rosy purple, is the best of its colour for bedding, as it is strong in growth, very free flowering, and especially rich in colour. *Moor of Venice* and *Prince Bismarck* are two zonals having flowers of the deepest crimson, and for contrasting with the brilliant scarlets and the lighter shades are invaluable, for with rich colouring they combine an excellent free flowering habit. *Mrs. E. Naish* is very distinct, the flowers deep crimson, with purple shading; *Wellington*, deep glowing crimson, is a fine nosegay for starving soils, the trusses are very large, and the flowers are of a rich glowing crimson; it is best suited for spacious borders and large beds. Another large grower is *Lucius*, which bears noble tresses of soft rosy scarlet flowers, and it blooms so profusely that in its line of colour it has no equal.

Turning to my notes on the pink varieties, I find that four, which will suffice for an ordinary-sized garden, are exceptionally good. First we have *Master Christine*, a fine variety, compact and sturdy in growth, and producing a profusion of medium-sized trusses of a very pleasing shade of bright pink. *Amaranth* is of extra strong growth, and bears gigantic trusses of flowers of a distinct purple-pink colour; *Mrs. Fytche* has flowers of a bright pink colour, the trusses are large, and borne in immense numbers, and the habit is excellent. *Cleopatra* is somewhat similar in style to the well-known *Christine*, and is in every way superior to it. If two sorts only are wanted, *Master Christine* and *Mrs. Fytche* should have the preference.

The best of the white zonals for light soils is *White Clipper*, but, like others of its class, it is not so good as could be wished. We have no thoroughly good white flowering geranium for bedding purposes.

The selection of varieties specially suited for heavy soils is somewhat difficult, because nearly all the zonal geraniums are more or less vigorous, and planted in these soils, they have a tendency to produce an excess of leafage, and a small proportion of flowers. The undermentioned are, however, thoroughly reliable, and it will be seen that these are quite sufficient to make, in conjunction with other classes of bedders, a really splendid display. At the head of the list must be placed *Vesuvius*, which is probably too well known to need comment. The flowers are not of so brilliant a scarlet as some others; but they are profusely produced, and the plant is neat in growth, and the beds have at all times a very bright and effective appearance. The double form of this general favourite distributed this spring under the name of *Wonderful*, is, perhaps, the most important addition to the list of zonals of the year. It is a sport from *Vesuvius*, and is precisely the same in habit, colour, and freedom of

flowering, and differs only in the flowers being double and remaining upon the plant so much longer. It is yet too expensive for bedding out, but those interested in new kinds should, in the course of the season, look after it. *Charley Casbon* is a sumptuous bedder on strong deep soils; it is very neat, and the flowers, which are produced very freely, are of the most brilliant orange scarlet. *Violet Hill Nosegay* is rather stronger growing than the preceding, but is equally neat, and blooms most profusely; the colour, a peculiar and effective shade of rosy-red. *Anna Pfitzen* is of a similar shade of brilliant orange scarlet as *Soleil*, and as it is of neat, compact growth, and flowers abundantly throughout the season, it may be considered one of the very best of its line of colour. *Didon* also has orange-scarlet flowers, and can be strongly recommended. *Edward Sutton* has dark crimson flowers, is very free flowering, and the habit is exceedingly neat. *Mrs. Hetley* is a rather dwarf counterpart of *Lucius*; the colour is a pleasing shade of light salmon red, the trusses are very large, and the habit excellent; it is in every way first-rate. *Lady Palmerston*, deep purple-crimson; and *Vesta*, bright crimson, are both excellent bedders; and *Triomphe de Stella* is a brilliant orange-scarlet nosegay, deserving of the heartiest recommendation.

Of the pink varieties that bloom freely on heavy soils, the best are *Mrs. R. Hole*, a pretty variety, with bright magenta pink flowers. *Mrs. Augusta Miles*, bright rose-pink; *Mrs. Haliburton*, a beautiful variety in the style of *Christine*, but vastly superior to it. *Fest of Roses*, a very attractive nosegay, the colour a very fine bright pink; and *Mrs. Upton*, bright pink, and very dwarf.

There is no white variety really suitable for heavy soils; they all grow with too great a degree of luxuriance, and I should recommend other white flowering bedders to be planted in preference to them.

## HANGING BASKETS FOR THE CONSERVATORY.

BY GEORGE SMITH.



**S**USPENDED baskets, neat in design, tastefully filled with suitable plants, and of a size proportionate to the structure, produce such a pleasing effect, that they should be considered a most essential part of the furniture of a well-appointed conservatory. But the baskets very often seen in conservatories are not neat, nor are they so tastefully filled that they can be considered elegant, and a few words explanatory of the best form of basket, and the manner in which they should be furnished to present a tasteful appearance, may at the present season afford material assistance to some, at least, of the many thousand readers of the *FLORAL WORLD*. Baskets suspended from the roof form such conspicuous objects, that unless they are filled with suitable plants and kept in good trim, they are eyesores, and the importance of bestowing something more than an ordinary degree of attention upon them need not be urged. Baskets are wanted



only in conservatories of good elevation and moderately spacious, and they should therefore be, as a rule, of fair size. Those ranging from fifteen to eighteen inches in diameter and from twelve to fifteen inches in depth are the most suitable for conservatories of average dimensions. In baskets of either of these dimensions, space will be afforded for the accommodation of sufficient plants to form a tasteful combination, and enough soil to carry them through the season. Double baskets—that is, baskets perfectly plain and enclosed with fanciful wirework, present a more light and elegant appearance than is possible in the manufacture of single baskets.

Apart from this, single baskets are objectionable, for it is difficult to prevent some portion at least of the moss employed for the purpose of keeping the soil in its place, projecting through the wires; and they, moreover, have a more or less heavy appearance, according to their size. With double baskets, the inner part, containing the soil, can be nearly hidden from sight by judiciously training a portion of the growth of the training plants over the wirework forming the outer cover. This is a point of some importance, and must not be overlooked. Three chains, about two feet in length, joined together at the top, are usually employed in the formation of what, for convenience, may be designated the handle of the basket. It is better, however, to have for baskets of the sizes mentioned above a neat iron rod coming up from the centre of the basket, and connected at the bottom with a stout cross-piece of wire, and at the sides by means of slender rods bent so as to connect with the upright at the top. As the strain will be equally distributed over the baskets, they will not readily become ill-shapen, as in the case of those suspended from the sides only. For suspending the baskets to the roof of the conservatory, either neat chains or twisted copper or galvanized wire may be employed. The manner in which baskets are usually suspended is capable of considerable improvement, for instead of tying one end of the chain or rope to a staple driven into the rafter, I would suggest that it be passed over two pulleys—one of these to be immediately over the basket, and the other close to a pillar or at the lower angle of the roof, and brought down to within a few feet of the ground. By this means the baskets can, with a sufficient length of rope, be lowered and the plants watered, and the growth regulated with considerably less trouble than is the case when the baskets are what might be considered fixtures. To draw them up and down is the work of a few seconds, and those who have charge of them can certainly give them the needful attention with a greater degree of facility when they are suspended a few feet from the floor, than when they have to be reached by the aid of a ladder or pair of steps. The only additional cost is the expense of two cheap pulleys, and a few yards extra of chain or rope.

As a free growth is in the case of basket plants desirable, a generous compost must invariably be employed. For the majority of the subjects suitable, there is probably nothing better than a mixture of three parts sound turfy loam, and one part of well-rotted manure, with a dash of sand. The loam must be broken up and the



manure mixed with it in much the same manner as for pots. A moderately thick layer of moss will be needful for keeping the soil in its place, and in filling the baskets with plants, care must be taken not to disturb it. Even in the largest sized basket the quantity of soil is not very great, and owing to the necessarily exposed position occupied, the moisture is quickly dried out of it. Therefore they must have frequent attention to insure the soil being maintained in a sufficiently moist condition for the health of the occupants. In the selection of plants for filling the baskets, the best course is to be content with a comparatively few things that are known to be of undoubted excellence. Baskets of geraniums are very useful for the summer and autumn, as they flower freely and do not suffer materially if the soil is allowed to become dry occasionally. When geraniums are exclusively employed, pink, white, and scarlet zonals or nosegays should be arranged in the centre in about equal numbers with an outer row of ivy-leaved geraniums, to trail over the sides. The best of the ivy-leaved geraniums, grown for their flowers, for this purpose, are *Argus*, rosy salmon; *Gem of the Season*, salmon; *Favonia*, deep purple carmine; *Peltatum elegans*, pale mauve; and *L'Innocence*, white. The light and dark varieties arranged alternately round the outside, have a remarkably beautiful appearance. *Duke of Edinburgh*, *L'Elegant*, and *Dolly Varden* are three variegated leaved varieties well adapted for planting alternately with those grown for their flowers. Baskets filled entirely with variegated and green-leaved ivy-leaved geraniums are exceedingly beautiful.

The miscellaneous plants that can be the most highly recommended for filling the centres of baskets, in addition to the zonal and nosegay geraniums already alluded to are, *Fuchsias*, *Heliotropes*, *Centaureas*, *Coleus*, *Golden* and *Silver Zonal Geraniums*, *Petunias*, and *Shrubby Veronicas*, all in variety. The most useful of the plants of slender growth for planting round the margin to trail over the sides are, *Cobæa scandens* and its variegated form, *Disandra prostrata*, *Lobelia speciosa* and its varieties, *Lophospermums*, *Maurandya Barclayana*, *Rhodochiton volubile*, *Thunbergia alata* in variety, *Saxifraga sarmentosa*, very useful for small baskets, and *Tropæolum Lobbianum* in variety. The growth of the trailing plants should be regulated, and a few shoots here and there cut back; but the training must not be severe, as the most elegant effect is produced by plants that appear to have been allowed to grow naturally.

The most elegant design for a basket I have seen is that figured at page 242 of Mr. Shirley Hibberd's very useful and entertaining work, the "Amateur's Greenhouse and Conservatory."

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VICIA ALBA, OR CANADIAN LENTIL.—A correspondent of the *Revue Horticole* recommends the culture of *Vicia alba*, or Canada Lentil, as a decorative plant for rooms. The seeds are to be sown in pots or pans, and kept in the dark at a suitable temperature. When the plants have attained a height of 40 to 50 centimetres they are taken out of the dark, and then form tufts of white foliage which serve well to mix in with other plants in *jardinières*, etc.

May.

## ON PLANTING FLOWER GARDENS.



THE principal work demanding attention in the flower garden during the current month, is the hardening off and planting the summer bedders. A little timely advice on the preparation of bedding plants was given in the number for April, and it is not needful to again refer to it. But it has been suggested to me that a few hints on the arrangement of the plants in the beds would be useful, and in compliance therewith I will make a few remarks on the subject that I trust will be found to possess as much practical utility as I am assured by correspondents my contribution to the April number possessed.

Amateurs and others will do well to distinctly understand that at its best the season for bedding plants is exceedingly short, and that to ensure complete success, the utmost exertion must be made to fill the beds immediately it is safe to do so. We are not safe from frosts until quite the end of May, and serious risk will be incurred by exposing the tender things, such as the *alternantheras* and *coleus*, before the last week, for a frosty air is nearly sufficient to blacken the foliage; and, owing to the slowness of growth, they seldom recover from injury by frost until the end of the summer. The frost is however seldom sufficiently severe after the middle of May to injure *geraniums*, *gazanias*, *heliotropiums*, *tropæolums*, and others of the half-hardy bedders, and consequently they may be planted out after the fifteenth without much risk being incurred. *Calceolarias*, *petunias*, and *verbenas* are capable of withstanding the effects of a rather sharp frost, and after the first week in May, there will be no risk in planting them out. Reference is here made to plants that have been in cold pits and fully exposed to the weather, excepting at night, for three weeks or so before the period suggested as suitable for planting. Those not removed from structures in which a comparatively high temperature is maintained, until May is well in, must not be put out until a fortnight or so after the respective times here mentioned. Exception must, however, be made to the *alternantheras* and *coleus*, for they should have the assistance of a genial temperature until quite the third week in May. The hardy kinds, such as the *cerastiums*, *centaureas*, and the golden feather, may be planted as early in the month as the beds can be made ready; but as they are mostly employed for edging purposes, they cannot well be put out until the centre of the bed has been planted.

Carpet bedding as carried out in the public parks and in large private gardens is not well suited for small gardens, because the surroundings are not suited for bringing out the arrangements to the best advantage, and the constant attention requisite for keeping the beds in order imposes too heavy a tax upon the available labour. Many of the dwarf-growing plants employed in the working out of designs in carpet or tapestry beds, are of the utmost value for edging purposes, and well merit all the attention usually bestowed upon them.

I shall not say much in reference to the arrangement of colours, for abstract principles are not of much real service, and a description of a number of arrangements known to be thoroughly satisfactory would be of little use, because but few readers, through not possessing the plants, would be able to copy them. There are, however, a few points to which allusion may probably be made with advantage. Speaking generally, it may in the first place be said that beds filled with one variety of geraniums, verbenas, or other class of plants, and enclosed with a broad marginal band of dwarf-growing subjects are the most effective. A favourite plan with some amateurs is to fill the beds with bands of several colours; a small block is formed in the middle, and then follow bands from fifteen to eighteen inches in breadth, until the bed is filled. The effect is seldom satisfactory; and when there are several beds together, a difficulty is experienced in arranging the planting so as to produce a satisfactory effect. But when each bed consists of one colour only, the effect is more decisive, and even those who have had but little practice will seldom experience any difficulty in producing a tasteful combination. Mixed beds of verbenas, petunias, annual phloxes, and so forth, are as a rule very effective, and the objection urged against beds planted in bands does not apply to them.

The marginal bands should range from nine to fifteen inches in breadth, according whether the bed is small or large. They may be formed with one, two, or three distinct classes of plants according to taste. The band may, for example, be formed entirely with one of the geraniums grown for the sake of their leafage, or one of the centaureas; or it may be formed with three lines, each consisting of three distinct plants. When formed with three lines, the outside line may consist of *Cerastium tomentosum*, the next line of one of the blue *Lobelias*, and the inside line of *Centaurea ragusina*, or a geranium with silvery variegation. Or if a golden-leaved plant would be more suitable, the outside line may be formed with Golden Feather, the next line with *Alternanthera magnifica*, and the inside line with Crystal Palace Gem geranium. These combinations form most effective edgings for large beds, and afford an opportunity for the employment of both *Alternantheras* and dwarf *Lobelias* in the most satisfactory manner possible. As a rule, the middle line should balance the central block of colour. As an illustration, it may be mentioned that when the centre is filled with dark foliage plants, the middle line should be formed with *Alternantheras* or the dark-leaved *Ajuga*. When the marginal bands consist of two classes of plants only, the same plant should be employed for the outside line, and for the line next the central block. For scarlet or pink geraniums, either white or yellow-leaved bedders are suitable for edging purposes, but for dark foliage beds, golden-leaved plants are the most effective, or for beds of blue or purplish flowers, silvery leafage is preferable. *Alternantheras* or other dark-leaved subjects may be used for the formation of the middle line of edgings, of either yellow or silvery leafage, but blue *Lobelias* should only be planted in combination with the latter; for blue and yellow do not produce a pleasing combination. For the same reason beds of blue flowers ought not

to be enclosed with a band of yellow leafage. It is of course desirable to have as great a variety as possible in small gardens, nevertheless, all the beds forming a series by the side of walks, should have an edging nearly, if not exactly alike, for the general effect is wonderfully improved by the uniformity in appearance. Or if this course is objected to, two distinct styles of edging may be adopted and arranged alternately. W.

## HARDY PRIMROSES.

BY WILLIAM COLE, GROVE VINEYARD, FELTHAM.

"Long as there's a sun that sets,  
Primroses will have their glory."

WORDSWORTH.



**H**ARDY primroses of the types represented by *Primula acaulis* or common primrose, and *P. elatior*, the garden polyanthus, although not so showy as the daisies alluded to last month, form a most useful class of plants for spring bedding. Consequently since the embellishment of the flower garden during the spring months has become popular, they have obtained increased attention and a large number of most beautiful varieties have been raised. In addition, several of most distinct form have been introduced, some of which make grand bedders. There is, for example, several varieties of *Primula cortusoides*, which beyond doubt are sufficiently hardy for planting in the flower garden. The value of the various forms to which allusion is here made, is not confined to their adaptability for bedding purposes, they may all be cultivated most successfully in pots, and when so grown, are extremely beautiful, as was exemplified by the collections exhibited by Mr. R. Dean of Ealing, at the show of spring flowers held at the Westminster Aquarium on April 12th and 13th. They are especially adapted to the requirements of those amateurs who have only a small pit or a cool house for the cultivation of plants, for they require no artificial heat, and a large collection may be grown in a comparatively small space. They are indeed so hardy that they may be grown entirely out of doors, but when grown under glass, the colours of the flowers are usually more fully developed; and as they are sheltered from the stormy weather often experienced, as was the case this year, when they are in bloom they remain in perfection much longer. Moreover the flowers can be examined in a more leisurely manner than is possible when they are planted in the open border or beds.

With the several forms already mentioned, may be associated *Primula Japonica*, one of the most noble of all the primroses, and *Primula viscosa* and other of the small growing species of which there are a dozen or so in cultivation.

A small span roof-house filled with primroses, will, from February until May, present a remarkably attractive appearance, and afford a rare treat to those who estimate flowers according to their beauty rather than their monetary value.

The cultivation of primroses for bedding purposes is so simple that a few words will suffice to describe it. Those who possess a stock at the present moment will have simply to lift the plants from the beds, when the latter have to be cleared in May, and plant them rather close together in lines on a shady border. They must have the soil pressed firm about them, and they should also be watered in to insure the soil being well settled about the roots. They may also be purchased now, and of course be planted in a similar manner. Should the weather be exceptionally dry during June, two or three soakings of water will be most beneficial, but beyond this, they will require no further attention. When the beds have been cleared of the summer flowering plants and dug over, lift the primroses, divide the largest clumps into two or more portions, each part to have from two to four crowns each, and then plant six inches apart each way. The beds must be filled early in October, to afford them a good opportunity of becoming well established before the severe weather sets in, and puts a stop to the growth. This is most important, for primroses grow freely during the autumn, and it is as well they should make the growth after they are in the beds as before, and then have to be disturbed.

When the hardy primroses are grown in pots, they should be repotted annually, the end of August or the early part of September being the most suitable time for the operation. When they are turned out of the pots, remove a portion of the soil and return them to clean pots of a similar size. Large plants are not desirable, and as a rule, those with three or four crowns each are the best. Therefore when they become large, divide them as here suggested at the same time as they have their annual shift. Place them out of doors until the middle of October, and then remove to a frame or cold-house. As they are in a progressive state throughout the winter, maintain the soil in a nice, moist state until the turn of the winter, and then commence to supply them more liberally with water. They must enjoy a free circulation of air about them, except in very severe weather, for they are in no way tender. When grown in the borders they are not very particular as to the soil, but for those in pots, a compost consisting of three parts turfy loam, and one part well-rotted manure should be employed. From the time of their going out of bloom until they are repotted in the summer, they should be plunged in coal ashes or some other loose material, on the north side of a hedge or wall, and the soil be maintained in a moderately moist state. The *Primulas* of the *Viscosa* type are of much slower growth than any of the others, and they should not be over potted. They must also have a shady position during the summer season, and be watered with rather more care than is necessary in the case of those comprising the other types. A moderate proportion of sand should also be added to the compost.

There are varieties innumerable of the *Acaulis* and *Elatior* types, but the following are twelve of the best for pot culture; they can be obtained at a moderate price. Of the *Elatior* or *Polyanthus* type, *Golden Prince*, yellow; *Bride*, white; *Cardinal*, crimson; *Conqueror*, magenta crimson; *Viceroy*, sulphur; and *Mauve Queen*, rosy

mauve. Of the Acaulis type, *Auriculæflora*, rich maroon crimson; *Gem of Roses*, rose magenta; *Queen of Violets*, puce; *Rosy Morn*, crimson; *Sunrise* and *Altaica*, mauve; the latter is considered a distinct species, but in habit is similar to the varieties of Acaulis.

All the varieties of *Primula cortusoides* are so good, that they well deserve to be grown. The best are those known respectively as *P. c. amæna alba*, *P. c. amæna*, *P. c. amæna grandiflora*, and *P. c. amæna lilacina*. Several strong plants of each of these will make a grand display. It is not necessary to divide these so freely as the others, and they are very effective in the form of large specimens.

The most beautiful of the Viscosa type are, *Primula auriculata*, *P. denticulata*, *P. farinosa*, *P. glaucescens*, *P. pulcherrima*, *P. scotica*, and *P. viscosa*.

In addition to the foregoing, there is the beautiful *P. japonica* and its numerous varieties, all of which make most attractive specimens by the simple course of culture recommended in the foregoing remarks.

## SEASONABLE WORK IN THE KITCHEN GARDEN.

BY WILLIAM GARDINER.



WING to the inclemency of the weather throughout April, much of the kitchen garden work properly belonging to that month still remains undone, and extra exertions will be necessary to bring up arrears.

The May work is of itself quite sufficient to keep both head and hands employed throughout the month. The pressure is indeed so great, that unless the various operations have systematic attention, and labour is economized as much as possible, it will be a work of extreme difficulty, if not practically impossible, to keep well abreast of the work and prevent any of the more important crops being jeopardized through not receiving the needful attention at the proper moment.

The first matter to be thought of is the sowing and planting of the April crops that as yet have not received attention. There is now no time to be lost, and if the work is deferred until the month is far advanced, the produce will certainly be more or less inferior. There is, for example, the Beet for main crops, Cabbages for autumn use, Salsafy and Scorzonera, Turnips, and a host of other things. The reader cannot do better than to refer to the April calendar, and if any of the crops recommended therein that he is desirous of growing are yet unplanted or unsown, as the case may be, he should dispose of them first, and then turn his attention to the work really belonging to May.

As *Asparagus* will soon be coming in freely from the open beds, it will, perhaps, be well to remind amateurs that the shoots, as they become fit for use, should be regularly cut until the season has so far advanced that the best can be no longer cut from without being seriously impaired. The practice of cutting a portion only of the shoots and allowing the others to grow up, is not good; for not

more than two-thirds of the buds at the crown of the roots start, and the beds are in consequence not so productive as they otherwise would be.

At the same time it may be well to mention the fact that the beds are very much weakened by being cut from after the first or second week in June, according as the season may be early or late. Seed of *Asparagus* may still be sown, if a supply of roots for planting is wanted; and cultivators are now generally agreed that *Conover's Colossal*, an American variety, grown largely in Long Island, New York, is so far superior to the English types, that it furnishes shoots large enough for the table at least a season sooner, and under ordinary culture, attains a much larger size. The seed should be sown in drills twelve inches apart, and the plants be thinned to four inches in the rows. Blanks in the beds may be filled up by inserting three or four seeds where the roots should be, and when the plants are large enough, thin each clump down to one. Planting, at the proper season, roots two or three years old, is to a certain extent best; but seed sown as here advised affords a certain and inexpensive means of filling up patchy beds.

The main crop of *Beet* should, as a matter of course, be sown in April; but there is yet time to sow with a certainty of obtaining a crop of first-class roots. The beds sown at the proper time will, towards the middle of the month, require thinning, and to ensure nice roots, the plants should be thinned to a distance of about twelve inches apart.

The most productive of the *Broad Beans* may again be sown where they are in request throughout the summer; but speaking generally, the middle of April is quite late enough for the last sowing. *Kidney* and *Runner Beans*, which are of the utmost value in small gardens, must be sown in quantities in the course of the month. If a nice warm border can be spared, a sowing of one of the earliest dwarf kinds should be made in the first week; and perhaps the very best for sowing thus early is *Sir Joseph Paxton*, for it combines productiveness and earliness in a remarkable manner. This sowing will require protection at night from morning frosts after the plants push through the soil, so long as there is any danger from frost, for a very few degrees will suffice to cut them off. A few boards, newspapers, or canvas may be employed for sheltering the rows. About the middle of the month sow a good breadth of *Sir Joseph Paxton* or some other good kind that turns in quickly; and *Cutbush's Giant*, which is rather late, and produces a heavy crop of immense and exceedingly tender pods. By sowing as here advised, a succession will be obtained from the earliest moment until the first crop of *Scarlet Runners*, which should be sown about the third week in May, will come into bearing. Early sown Runners usually fail in September, and to maintain a supply until late in the autumn, sow at the end of May *Carter's Champion*, which is a very fine variety, or make a second sowing of the old *Scarlet* recommended for the first sowing. Dwarf *Kidney Beans* are seldom so productive as they otherwise would be, because of the rows being too close together, and the plants crowded in the rows. To ensure produc-



tiveness, the rows, when parallel to each other, must be two feet apart, and the plants six inches from each other in the rows. To avoid blanks, put the beans three inches apart, and when the plants are safe from slugs, remove every other one.

To insure a supply of young and tender Carrots throughout the summer, sow a moderate-sized bed of either the *Short Horn* or *James's Intermediate*; but unless they are preferred of a very small size, the last-mentioned is decidedly the best, as the roots, when about half-grown, are the most elegant in appearance, and of the finest quality. The main crops sown early in April will require thinning in the course of the current month, and this should be done gradually, with a view to the utilization of the thinnings; but they must not be left until they become so crowded that the crop is injured in consequence. They should be thinned to about six inches in the rows, which is a very good distance when a heavy crop of moderate-sized roots is required.

The principal summer crop of *Cabbages* and *Cauliflowers* should be planted as opportunities offer, and as far as practicable before, rather than after a period of showery weather, as the rain will settle the soil and otherwise assist them to become established quickly. The autumn crop of *Cauliflowers* should be sown in the third week, and if a quarter can be spared at the time of sowing, form drills two feet apart, and sow thinly. As the plants become large enough, commence to thin, and at the final thinning, leave the plants as nearly as possible eighteen inches apart. By this means all the labour of transplanting and watering will be avoided, and as the plants will receive no check whatever at any stage, they may be depended upon for producing heads remarkable for their solidity, purity of colour, and superb quality. If large heads are required, *Veitch's Autumn Giant* is the best for sowing now; but if those of a medium size are preferred, then sow our old friend, the *Walcheren*, which may still be considered one of the most useful forms of this fine vegetable at present in cultivation. *Brussels Sprouts* should also be planted out as fast as they are of sufficient size, and the ground can be made ready for their reception. *Broccoli* is not a profitable crop for the amateur who has but little space for growing vegetables; but it may be well to remind those who like to grow a small breadth that the principal crop must be sown in the first or second week. This is necessary to insure a stock of strong plants for putting out as soon as the quarters occupied by early Potatoes, Spinach, and other early crops, are vacant.

*Capsicums*, *Tomatoes*, and *Vegetable Marrows* are all more or less tender, and although they differ considerably in their cultural requirements, they may well be grouped together here. The *Capsicums* and *Chilies* bear freely when planted at the foot of a south wall, provided strong plants are put out immediately all danger from frost is past. Plants now in small pots should be immediately shifted into others two sizes larger, and be placed in a frame or greenhouse, where they can enjoy the advantages of a free circulation until such times as they can be put out in the border. *Tomatoes* are grown with the greatest degree of success when trained to a wall or a close fence;



but in warm, dry situations, plants trained to stakes in the open quarters will, in favourable seasons, ripen nice crops of really excellent fruit. The principal point, whether they are to be grown against walls or in the open quarters, is to have strong plants ready for putting out as soon as it is safe to do so, which is usually about the end of the month. I find it good practice to have the stock well established in six-inch pots by the time of planting, and the shift into these pots is usually given either in the last week of April or the first week in May. They cannot have too much sun, and whether it is intended to cultivate them in the open quarters or against walls, the sunniest situation the garden affords should be set apart for them. Tomatoes may be very successfully grown in pots, and for small gardens this system of culture can be strongly recommended. It is simply necessary at the end of May to put them into ten-inch pots, and stand them upon bricks or planks in a sunny situation. As soon as the growth requires support, put a few stakes in the pots, and tie the shoots to them. *Vegetable Marrows* do so well when the seed is sown where the plants are to be grown that it is quite unnecessary to take the trouble to raise the plants in heat as is so generally recommended by horticultural writers. The third week will be soon enough to sow for main crops; but if Marrows are wanted as soon as they can well be had, sow at once, and protect the plants after they make their appearance above the surface, with bell or hand-glasses; but if neither of these protectors are available, turn flower-pots over them. The protection must be continued so long as there is a risk of frost, and no longer. Sow three seeds in each station, and in due course the plants must be thinned to one. To allude to all the kitchen garden work that must have attention in the course of the current month, would occupy more space than could probably be spared, and it is hoped that these brief hints will be useful to amateurs who have not had over much experience in the cultivation of vegetables.

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### SUMMER FLOWERING BEGONIAS.

**R**EADERS of the FLORAL WORLD who are desirous of something new in the way of bedding, should turn their attention to the summer flowering Begonias, which now form a most valuable class of decorative plants. Of late years a very large number of new varieties have been raised by some of the leading English and Continental nurserymen, and there are now a very numerous assemblage of splendid varieties that may be obtained at a moderate price. Foremost amongst the raisers in this country are Messrs. J. Veitch and Sons, of Chelsea, and Messrs. E. G. Henderson and Son, of St. John's Wood, and the leading raisers on the Continent are M. Lemoine of Nancy, and M. Van Houtte, of Ghent, and their efforts have been so successful, that we have in cultivation at the present moment upwards of a hundred really beautiful hybrids.

From the above-mentioned number, I have selected the following as being in every way suitable for the amateur who is in want

of a few of the best only, and I would add, that in the course of last summer I had every facility for forming a correct opinion of their respective merits. I will not weary the reader with tedious descriptions, and in giving the names, simply indicate the colour of the flowers. Those I shall recommend are *Boliviensis*, orange scarlet; *Chelsoni*, salmon scarlet; *Coral Rose*, rose carmine, a dwarf-growing hybrid in the way of Veitchi; *Dr. Masters*, carmine crimson; *Emerande*, rose scarlet, medium height; *Martimiana*, bright rose pink, dwarf; *Rubens*, bright orange; *Sedeni*, magenta rose; *Vesuvius*, deep crimson scarlet; and *Vivicans*, brilliant scarlet.

All the foregoing are well adapted for bedding and conservatory decoration. To have grand beds of these begonias, select a moderately open position, and sometime previous to planting, apply a moderately liberal dressing of well-rotted manure or leaf-mould, and well incorporate it with the soil. The end of May is a suitable time for planting, and to insure the beds being well filled, and at the same time afford all the plants sufficient space to become fully developed, put them from nine to twelve inches apart each way. They must have two or three liberal supplies of water when newly planted, should the weather happen to be dry at the time. Beyond this they require no further attention, for stopping and training are alike unnecessary. Until the period arrives for filling the beds, stock should be kept in a frame; to be well ventilated on all favourable occasions, and for a week or ten days before planting, the lights should be removed altogether. Plants obtained early in the month in small pots, should be at once shifted into five or six-inch pots to afford them an opportunity of acquiring strength.

The plants intended for specimens for the conservatory, should be simply shifted into five-inch pots at once, and when well established, be transferred to six or eight-inch pots, as may appear necessary according to the size of the individual plants. From the present moment till they are coming into bloom, they can be kept in a frame, or in a greenhouse, as may be the most convenient. Liberal supplies of water will be required, and neat stakes should be employed for supporting the principal shoots.

Those to which allusion is here made, are strictly herbaceous in character, and have tuberous roots. Those grown in pots should remain undisturbed until the spring; but in the case of those grown in the beds, the tubers should be lifted as soon as the autumn frosts cut them down to the ground. After they are lifted lay them in an airy place for a day or two, for the soil about them to become dry, and then bury them in dry sand and keep them in a dry place, where they will be safe from frost.

G. S.

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**ASTERS.**—*Amateur.*—In the production of blooms of these flowers for exhibition purposes, a deeply-stirred and moderately rich soil is necessary, but for garden decoration so rich a soil is not required. Large beds of asters are remarkably effective, but as they do not come into bloom until rather late in the summer, it is advisable to plant them in the mixed border. When planting in borders, put them in groups, each group to consist of three or four plants of one colour. Betteridge's Quilled Asters, that are being sent out by Messrs. J. Carter and Co., of High Holborn, are exceedingly beautiful, and can be strongly recommended.

## CULTIVATING GAUNTLET GERANIUM.

BY ROBERT OUBRIDGE,

Church-Walk Nursery, Stoke Newington, N.



HIS fine old geranium is a great favourite in Covent Garden, for the flowers—which may be had in profusion throughout the winter and spring months—are of a very pleasing shade of soft rosy red, and are exceedingly well adapted for bouquets. Nicely flowered plants are also well suited for indoor decorations; and, as they are very effective in the conservatory, amateurs may grow a stock with advantage. The flowers are not of so fine a quality as those of the best of the show pelargoniums, that may be had in perfection in May, but they are of fairly good shape, effective in colour, and produced in succession throughout the winter, when the florists' varieties are not to be had in bloom. For very many years I have grown Gauntlet in large numbers for market purposes, and I have long been persuaded that it is one of the most useful geraniums we have for winter decorations. The present moment is most suitable for commencing to work up a stock for next season; and I have thought that a few hints on its cultivation might be of service to many amateurs. I have accordingly prepared a brief outline of the system by which we have obtained very satisfactory results.

As I am desirous of affording all the information I can upon the cultivation of this valuable geranium, I will first of all give a few directions for propagating a stock. Nice firm-growing shoots are the best for making cuttings. These should be taken off early in March, and inserted singly in thumbs or small sixties, and be placed in a warm pit or house till nicely rooted, and then be removed to the ordinary greenhouse until the end of May. At this stage the plants must be removed to the cold frame; but before doing so, it will be well to give them a shift into large sixties, and then, with a fortnight's shelter in the frame, they will be in good order for going out-of-doors.

Much of the common practice in dealing with pelargoniums when out-of-doors must be unlearned at this stage. It is a matter of sheer impossibility to obtain good flowering specimens by autumn, if the plants are now brought out-of-doors and placed under the shelter of hedges, walls, or along side of walks, without the slightest protection afforded them against worms. I am very particular upon this point, and have a bed of coal-ashes—not less than a foot in thickness—made up out in the open for standing the plants upon.

Supposing the plants to have been brought out-of-doors about the middle of June, stop the young shoots the first week in July, and shift into forty-eights or thirty-twos a fortnight afterward. Return the plants to the bed of ashes after they are repotted, and stand them far enough apart to allow the young growth to develop itself in a natural manner.

In the early part of September the stock should be brought into May.

the greenhouse, be placed close to the glass, and have plenty of air. Here it will be necessary for me to say that it will be no use to place the plants in lofty or dark houses, especially such as have the roof covered with vines; they will not flower satisfactorily in houses of this sort. We ventilate the house freely when the plants are first brought indoors in September, to lessen the change as much as possible. In a fortnight afterwards they will begin to feel at home, and, as the weather will become colder, less air will be necessary. Air-giving must at all times be regulated by the state of the weather outside. In dull, damp weather, use a little extra fire-heat, to admit of the ventilators being opened for a short time during the early part of the day, rather than keep them close for fear of the house getting too cold. We regulate our house between  $55^{\circ}$  and  $60^{\circ}$  throughout the whole winter, and the plants grow and flower grandly in that warmth. It is an important matter not to deprive the plants of a breath of fresh air for the sake of a few shovelfuls of firing, when it can be admitted without injury.

Plants managed as advised will flower freely from October until the following May, or longer if required. They are, however, not so much wanted after the middle of the month for conservatory decoration, as we then have plenty of the more highly finished florists' flowers. About the middle of May place the plants in a dry airy house, where they will receive just sufficient protection from frost. Early in June place them out-of-doors to ripen the wood, and immediately that is accomplished, cut the shoots back to three or four buds each, in the same manner as other varieties. Let them remain on the bed of ashes until the young shoots are about half an inch in length, and then shake out and repot. The roots must not be pruned in quite so much as those of the ordinary varieties. They should be potted at once into thirty-twos or twenty-fours, according to their size. Over-potting must be guarded against; but by putting them in the above-mentioned sizes at once, no further shift will be required until next year.

When they are potted, they should be placed in a cold frame, and have the freest ventilation possible. The lights ought only to be put on in wet weather, and then they should be tilted back and front, the object being merely to protect the plants from becoming too wet at the roots. No stopping will be required after the first year, as this variety has a very compact branching habit, and bushy, well-shaped specimens can be had without the excessive pinching and stopping necessary to keep most of the other varieties in order. As a proof of this, I may mention that I have had plants that were allowed to grow as they like without any stopping, that have become perfect pyramids, covered with flowers. In September they must go to the greenhouse, and from that time receive the attention advised for the young stock the previous season.

I have not as yet said anything about watering and soil. The first can be dismissed with a few words, there being no material difference between its application to this and the summer-flowering varieties. Gauntlet will require rather more than the others during the winter, as it will then be in full growth, whilst the others will

be nearly at rest. A plant that is worth growing will always pay for good soil. I make a point of obtaining the best loam that can be had, and to this fact I attribute a large proportion of my success; it would not pay to use unsuitable hungry stuff in growing flowers for market. We use good turfy loam that has been lying in a heap for at least twelvemonths; a little sand is added to make it feel gritty, and a small proportion of well-rotted manure to insure a vigorous growth. The plants must be potted firm at all times; and if they show signs of exhaustion towards March and April, give a little weak liquid manure. This must be used sparingly, as too much water is worse than none at all. So long as they continue growing and flowering no liquid manure will be needed.

### THE JERUSALEM ARTICHOKE.



THE Jerusalem Artichoke is so well known that to describe it would be waste of time, and imply lack of respect for the reader. It is, however, a fact of some importance that it is not often well grown and that it is rarely seen on good tables. There is, we think, room for a little reform in respect of this useful plant, first, for the suppression of a prevailing prejudice against it; and secondly, for the ordering of its cultivation in a more profitable manner. When well grown and sufficiently cooked, it is a most acceptable vegetable, but a little training of the palate is requisite to the full enjoyment of its flavour. It is usually served with white sauce; but this is by no means necessary, for any good gravy may take its place advantageously. It often happens that when brought to table these roots are of a bad colour and too crisp to be agreeable. These are the common results of unskilful cooking. They require to be washed and pared as potatoes are; but as this is done, they should be thrown into a bowl of clear water, into which a few drops of juice have been squeezed from a lemon. If this is not done, the roots are apt to become slightly discoloured in the process of cooking; but a very little lemon-juice suffices to preserve the colour. When all are ready, put them into a pot containing sufficient boiling water to just cover them, with a rather large allowance of salt, and keep them boiling twenty to forty minutes. They should be quite tender, and, indeed, almost pulpy when sent to table. They are then delicious, and thoroughly wholesome.

The Jerusalem Artichoke is rarely well cultivated, and consequently the roots are often so small as to be scarcely worth the trouble of cooking. This plant, like many others, pays best in good ground. Ours are grown on strong clay land, that has been well trenched during winter. On a poor soil we should use manure liberally; but our heavy clay does not need any such aid, and we find our artichoke roots average in weight 1lb. each, which is considerably above the weight of fair samples in the market. The small roots are set aside for planting, and are generally planted in

May.

the later days of March, April, or early in May. They are put in rows two feet asunder, and the sets fifteen inches apart in the row. This is a more liberal allowance of space than they usually obtain: but they pay well for it, for while the aggregate crop is heavy, a majority of the roots are large, and it is a fact of some importance that Jerusalem Artichokes cannot be too large, owing to the inevitable waste that occurs in preparing them for cooking. We measured some of our stems last year, and found the shortest to be eight feet, and the tallest fifteen feet, and nine-tenths of them flowered.

S. H.

### NEW BOOKS.

**VILLA GARDENING.** By WILLIAM PAUL. (Warne & Co.) This is the third edition of an unpretending but eminently useful book, by one of the "great masters" of horticulture. It treats of all the subjects that are likely to have a place in a villa garden—the fruits, vegetables, flowers, ornamental trees, grass plots, and things fanciful, and even things exceptional. The information is conveyed in a series of agreeably written letters, and it is illustrated by engravings that serve their intended purpose, though they are not remarkable for beauty.

**THE DWELLERS IN OUR GARDENS, THEIR LIVES AND THEIR WORKS.** By SARAH WOOD. (Groombridge.) A truly delightful book, full of serious information on butterflies, bees, moles, moths, spiders, birds, snails, etc., etc., enlivened with well-told anecdotes and really charming pictures, not a few of which are entitled to be spoken of as works of art. Look, for example, at the frontispiece, which indicates, by a few happy touches, how nature arranges matters so that a butterfly shall bear a close resemblance to the plant it prefers to rest upon, and its enemies are thereby deceived, and through the deception its life is saved. The gold crested wren is beautifully drawn, as is the group of butterflies at page 35, the siskin at page 107, and the swarm of leaf miners at page 152. But the robin is of course badly drawn, and, strange to say, we have never but once seen a truthful portrait of a robin, and that was one drawn from the life, the figure of which appeared at page 183 of the first volume of "Recreative Science," and strange to say, that is a ragged figure, though from the delicate pencil of Mr. George Voyerz. "The Dwellers in our Gardens" challenges criticism, because it contains much that is true and sound and precious, but is not so complete and perfect as it might have been, owing to the mixed character of its pictures. It is a gem of a book, notwithstanding, and as it is published at the unusually low price of 3s. 6d., our mild censures may, after all, be ungracious, or, say, not in the best of taste.

**REFLECTIONS AND MAXIMS RELATING TO THE CONDUCT OF HUMAN LIFE.** By WILLIAM PENN. (Groombridge.) A nice little book of wisdom for the traveller's pocket, or to keep at hand for five minutes' intellectual refreshment at any time. By the way, our friend the "uncommercial traveller," who can, as a rule, appreciate good literature, follows the way of the world too much in stuffing his pocket and his satchel, and perhaps his bag or portmanteau, with newspapers, instead of taking with him a few good books, when he wanders from home. We lately met with an editor of a newspaper in a railway carriage quietly enjoying the *Anabasis* of Xenophon, and he apologised by saying, "You see I am sick of newspapers, and so I am having a fillip of Xenophon." Being emboldened thereby, we rejoined, "Ah, you go on with your ten thousand, our feast shall be on the wisdom of Penn's Reflections and Maxims." There might have been less happy people in the carriage than the two who read books while the rest read papers.

**ANNUAL REPORT OF THE MELBOURNE BOTANIC GARDENS.** By W. R. GUILFOYLE, F.L.S., Etc. (G. Skinner, Melbourne.) We have read this report with much interest, and we hope advantage. It conveys a most agreeable impression of the progress of botanical and horticultural taste and knowledge in Victoria, and the talent displayed in its preparation amply justifies the cost incurred in making it public. We learn that the botanic gardens of Melbourne have been in various ways improved, the stock of plants greatly enlarged, and the collections illustrative of

economic botany have been rearranged and amplified. There is much in this report to interest merchants and manufacturers, as well as botanists and gardeners.

**THE BEE PRESERVER.** By MISS STIRLING GRAHAM. (Edmonston & Douglas, Edinburgh.) A very welcome adaptation to the circumstances of British bee-keepers, of the famous work of De Galieu. We may truthfully say with the translator, we "have not found any bee-book giving more practical directions. It is well adapted to any countryman or countrywoman of sense who may have the happiness to possess a hive of bees in a cottage garden." Every bee-keeper, whether in town or country, would do well to con over this little book quietly, and master its major propositions.

**THE LADIES' TREASURY.** *A Household Magazine of Literature and Fashion.* Edited by MRS. WARREN. (Bemrose.) The 217th monthly part of this work forms the commencement of a new volume, and will, we hope, bring to it thousands of new supporters. It is beyond all doubt the best of the many magazines that are specially prepared for and addressed to the maids, wives, and widows of our country, and is *par excellence* a "ladies' treasury" in all that relates to household management, education, fashion, and the amusements and industries of the fireside. It contains good stories, learned essays, careful gatherings of news, original patterns, and heaps of good advices on cookery, dress, deportment, and the general conduct of life. Moreover, the price has been reduced from ninepence to sixpence a month, to increase its sphere of usefulness.

## THE GARDEN GUIDE FOR MAY.

WHAT is the existence of man's life,  
But open war, or slumber'd strife;  
Where sickness to his sense presents  
The combat of the elements;  
And never feels a perfect peace  
Till death's cold hand signs his release?

It is a storm—where the hot blood  
Outries in rage the boiling flood;  
And each loose passion of the mind  
Is like a furious gust of wind,  
Which beats his bark with many a wave,  
Till he casts anchor in the grave.

It is a flow'r—which buds, and grows,  
And withers as the leaves disclose;  
Whose spring and fall faint seasons keep,  
Like fits of waking before sleep;  
Then shrinks into that fatal mould  
Where its first being was enroll'd.

HENRY KING.

## THE FLOWER GARDEN.

THE spring bedders will be at their best during the early part of the month, and the garden should be as gay with flowers as in the height of the summer. A large number of the ordinary herbaceous plants will also be in bloom this month, and amongst others may be mentioned—*Campanula glomerata*, *Cheiranthus Marshalli*, *Dielytra spectabilis*, *Dodecatheon Media*, *Hesperis matronalis*, *Lilium Thompsonianum*, *Scilla campanulata*, and *Iris germanicum*. The annuals sown last month are now nicely up, and must be thinned before they are spoilt from overcrowding. Successional sowings should be made, towards the end of the month, for autumn flowering. Also, sow hardy perennials, that there may be sufficient time for them to become strong before winter. Asters, stocks, zinnias, and other hardy and half-hardy annuals, can be sown in the open ground now. Harden off those sown under glass, and plant as speedily as possible. All the ordinary bedding stuff ought to be in cradles or out of doors. Subtropical plants, of a tender constitution, intended for the decoration of the flower garden, must have free exposure to the air, to fit them for going out next month. Thin the buds of pinks, picotees, and carnations, and shade those intended for exhibition. Remove auriculas to a shady position, if not already done. Trim up the grass verges, and mow and roll

May,

the lawn, to promote a close bottom, and give everything a fresh and bright appearance.

#### KITCHEN GARDEN.

Weeds grow with great rapidity at this season of the year, and every exertion must be made to keep them down, or they will fill the ground with seeds. Thin out all permanent seed-beds, such as onions, carrots, etc., and plant out broccoli, cauliflowers, cabbage, kales, etc., for the winter, as the plants become large enough to transplant, before they are too much crowded. Sow scarlet-runners, dwarf French beans, beet, turnips, spinach, endive, and lettuce; the two last should be sown where they are to remain, to prevent their running to seed so quickly, as is the case when sown in beds and transplanted. Also sow marrow peas, and earth up and stick those already forward enough. Prick out the late sown celery, and make trenches, and plant out the earliest batch. Shade with a few branches of evergreens for a few days after planting, and keep well supplied with water.

#### FRUIT GARDEN.

In disbudding wall trees, guard against denuding the trees too much at one time; remove the foreright shoots first, and then begin again, and remove those not required for training in. Proceed cautiously with thinning the fruit until the end of the month. Remove the runners from the strawberry plants directly they push, if not wanted for layering, or the parent plants will soon be choked up with the young brood.

#### GREENHOUSE AND CONSERVATORY.

Now that the frames are clear of the hosts of bedding plants with which they have been filled through the winter, all small soft-wooded stuff should be removed to them, and hard-wooded plants must have light and air, now that they are growing freely. Azaleas and camellias require a warm, moist atmosphere when making their growth, and to have plenty of air directly it is made. Freely ventilate New Holland plants of every description, and attend carefully to the watering, and be particular that each has sufficient to moisten every particle of the soil in the pot. Any plants growing in peat, that become dust dry before watering, should have the pots stood in a vessel of water for twenty minutes or so, to ensure the bulb being thoroughly moistened. Shift and stop fuchsias and petunias; water them with manure-water as they become pot-bound. Expose pelargoniums for a week or so after they go out of flower, and then cut back and shake out, and repot as soon as they are nicely started into growth.

#### VINERY.

Borders inside the house must be liberally supplied with water, where the crops are swelling, and the atmosphere kept moist by throwing water on the paths, and sprinkling the beds and walls. Where the grapes are colouring, give abundant ventilation, and keep the atmosphere dry. The crops should be watched, and the border have a good soaking just before the grapes commence colouring, so that no more is required until that process is finished. Shift on young vines in pots, and help those bearing crops with liquid manure.

#### STOVE.

Large numbers of orchidaceous plants will now be in flower, and every means, consistent with the health of the plants, must be adopted to preserve the freshness and beauty of the flowers as long as possible. A cool, dry atmosphere is necessary for this purpose. Shift those in the hottest house into the cool house, and those from the cool house into the greenhouse, where they can be shaded and kept close; for, on no account, must the plants be exposed to currents of air. Gesneras and other plants, intended for winter blooming, must soon have their last shift. Shade during bright sunshine, and place those in flower by themselves, so that the flowers receive no injury from the syringing, which has now become a daily necessity.



## HORTICULTURAL AFFAIRS.



THE ROYAL HORTICULTURAL SOCIETY held two meetings in April—one on the 5th and the other on the 19th; but as no prizes were offered, the subjects exhibited consisted of novelties and miscellaneous contributions. To the first of the two meetings Mr. B. S. Williams sent a beautiful group of flowering and fine-foliage plants, amongst which were the beautiful *Dendrobium luteiflorum* and *D. Wardianum*, *Phalænopsis Schilleriana*, *Anthurium Scherzerianum*, *Bertolonia superbissima*, a very beautiful form, with large handsome leaves regularly spotted with rose on an olive-green ground, and *Kentia australis*, one of the very finest palms yet introduced for indoor apartments, for it is exceedingly graceful, and is well able to withstand the adverse influences to which it is likely to be subjected when indoors. Messrs. J. Veitch and Sons exhibited fine specimens of the lovely *Dendrobium Wardianum* and *Cattleya Veitchi*. Messrs. Paul and Son, Cheshunt Nurseries, exhibited five splendid stands of cut roses, consisting chiefly of hybrid perpetuals, and several roses in pots. Mr. Henry Bennett, Manor Farm Nursery, Stapleford, Salisbury, exhibited blooms of several new roses, amongst which Mons. E. Y. Teas, a hybrid perpetual of last year's introduction, was especially good; the flowers are of average size, very full, perfect in form, and of a rich deep crimson colour.

THE ROYAL BOTANIC SOCIETY'S first exhibition for the current year, although not characterized by any striking feature, was good throughout, and a very effective display was produced. The collections staged in competition for the prizes offered were as usual arranged in the corridor leading from the north entrance to the conservatory, and the contributions to the miscellaneous class were grouped in the conservatory. Hyacinths and Tulips were exhibited in larger numbers than for many years past; Cyclamens, Deutzias, and Lily of the Valley were quite up to the average, and Azaleas and hard-wooded flowering plants were well represented.

THE ROYAL AQUARIUM SOCIETY, WESTMINSTER, held its first horticultural exhibition on April 12 and 13, and which proved so good that it was unanimously pronounced the best spring show of the year. The principal features of the exhibition were the Azaleas, Cyclamens, hardy spring flowers, and the show and Alpine Auriculas. Forced Rhododendrons, hardy Azaleas, and forced shrubs were not well represented. Pot Roses were shown in splendid condition and in comparatively large numbers, and miscellaneous collections were staged by most of the principal metropolitan nurserymen. The plants were arranged to form a series of irregular banks along the sides of the two halls, and as care was taken to have an equal distribution of flowering and ornamental-leaved plants throughout, and to keep the dwarf-growing subjects well to the front, the general effect was exceedingly good.

MR. RICHARD HEADLY, who was one of the most successful raisers and cultivators of auriculas and tulips of the present century, died on April 14, at his residence, Stapleford House, Cambridge, at the ripe age of eighty-one. Mr. Headly did not, however, devote the whole of his attention to the two classes of flowers mentioned above, as the magnificent collections of stove and greenhouse plants, and miscellaneous subjects, which for many years were staged at the annual exhibitions of the Cambridge Horticultural Society, amply testified.

MR. JOHN BENINGFIELD, late of the Crown Inn, Broxbourne, Herts, died at Ware, on April 18th, in his 81st year. Under Mr. Benningfield's management, "The Crown" at Broxbourne became famous for its beautiful gardens and splendid collections of hollyhocks and dahlias; consequently, during the autumn months it was a favourite resort of those who took an interest in those flowers, as well as of anglers and the general public.

THE PHILADELPHIA EXHIBITION will be opened on May 10, and as the arrangements have been pushed on with so much vigour, it is anticipated that they will be completed by the opening day. The main building has been completed since January, and the Horticultural Hall, which has been finished for some time, is furnished with orange and lemon trees, palms, and other plants of large growth, and the interior presents a very attractive appearance. The grounds surrounding the building devoted to horticultural purposes have been laid out, and spaces allotted to various nations, and are now being planted with the various shrubs and plants with

May.

which they are to be embellished during the summer. Mr. B. S. Williams has sent out several cases of most valuable stove and greenhouse plants, and Messrs. J. Veitch & Son have contributed a collection of choice hardy plants.

THE SPRING BEDDING AT THE CRYSTAL PALACE is arranged with admirable taste, that those who have the opportunity should not fail to see it before it is past its best. Mr. Thompson has filled the series of beds on the semi-circle of the principal terrace with scillas, daisies, forget-me-nots, violas, silenes, and other of the more showy spring flowers in geometrical arrangements, and there is now a charming display of colour.

A COURSE OF INSTRUCTION IN BOTANY will be given at South Kensington by Professor Thiselton Dyer, M.A., B.Sc., etc. The course, commencing about the middle of June, and extending over a period of about eight weeks, will comprise a daily lecture, with practical instruction in the Laboratory. A limited number of Science Teachers, or of persons intending to become Science Teachers, will be admitted to the course free of expense. The hours of attendance will be from 10 A.M. to 4 or 5 P.M.

THE ROYAL NATIONAL TULIP SOCIETY's exhibition for the coming season is fixed to take place at the Manchester Botanical Gardens on Friday and Saturday, May 26 and 27.

MR. COOMBER, late head-gardener at Knole Park, Sevenoaks, Kent, has been appointed Superintendent of the Royal Botanic Society's Garden, Regent's Park. Previous to leaving Sevenoaks he was presented, by a number of his friends, with a substantial proof of their appreciation of his professional ability and moral worth.

THE NEW VEGETABLE MARKET, to be erected by the Corporation on the vacant land between Charterhouse Street and Snow Hill, and adjoining the New Poultry Market, has been commenced. The building is to be uniform in its external features with the two markets already erected, and will extend on the south side in a westerly direction to Farringdon Street, in a line with the south boundary of the Poultry Market. The new market will occupy an area of upwards of 2 acres in extent.

## MAY EXHIBITIONS.

1.—BRUSSELS INTERNATIONAL HORTICULTURAL EXHIBITION.—*First Day of Botanical Congress.*

1 TO 23.—ROYAL BOTANIC SOCIETY.—*Messrs. Jackman's Exhibition of Clematis.*

3.—ROYAL HORTICULTURAL SOCIETY.—*Fruit and Floral Committees, 11 a.m.; Scientific Committee, 1 p.m.; General Meeting, 3 p.m.*

5 AND 6. ALEXANDRA PALACE, MUSWELL HILL.—*Great Summer Exhibition.*

10.—GLASGOW AND WEST OF SCOTLAND HORTICULTURAL SOCIETY.—*Summer Exhibition.*

10 AND 11.—ROYAL AQUARIUM, WESTMINSTER.—*Exhibition of Roses and Table Plants.*

11.—ROYAL OXFORDSHIRE HORTICULTURAL SOCIETY.—*First Summer Exhibition.*

17.—ROYAL HORTICULTURAL SOCIETY.—*Fruit and Floral Committees, 11 a.m.; Scientific Committee, 1 p.m.; General Meeting, 3 p.m.*

18.—ROYAL HORTICULTURAL SOCIETY OF IRELAND.—*First Summer Exhibition.*

18.—READING HORTICULTURAL SOCIETY.—*First Summer Exhibition.*

19 AND 20.—CRYSTAL PALACE.—*Great Summer Show.*

24.—ROYAL BOTANIC SOCIETY.—*First Summer Exhibition.*

24 AND 25.—TIVERTON HORTICULTURAL SOCIETY.—*Annual Exhibition.*

26 AND 27.—ROYAL NATIONAL TULIP SOCIETY.—*Annual Exhibition at the Manchester Botanical Gardens.*

30 AND 31.—ROYAL AQUARIUM, WESTMINSTER.—*Exhibition of Stove and Greenhouse Plants.*

## TO CORRESPONDENTS.

**AZALEAS.**—*W. H. C.*—Azaleas can be pruned, severely or otherwise, as may appear desirable; for they break freely from either the young or the old wood. The most suitable time for pruning is just before they commence to make new growth, or immediately after they go out of bloom. They may be pruned as late as the middle of May, with a fair prospect of breaking strong. If convenient, place them after cutting the shoots back, in a structure in which they can have the assistance of a temperature of about 70°, and a moderately moist atmosphere. A spacious pit, in which they can be kept close and warm, and be syringed overhead twice a day, will afford them the most suitable quarters. When the new growth is completed, gradually harden off, and place out-of-doors for a month or six weeks to insure the thorough maturation of the wood.

*Inquirer.*—Cuttings of the firm side-shoots of the clematis may be struck under hand-glasses out-of-doors. The clematis may also be increased by layering the young shoots in September. The plants raised from cuttings and layers may be expected to bloom in the course of the second summer and autumn. Cuttings of azaleas should be taken when the new growth has become rather firm; select moderately strong shoots; take them off about three inches from the point, and after a portion of the lower leaves have been removed, insert them in pots filled with peat and sand. The cuttings should be placed under a hand-light in the greenhouse, or be covered with bell-glasses. They require very careful attention until the cuttings are struck. It is impossible to state the exact length of time the plants raised from cuttings will require for attaining a size sufficient to produce a good display of flowers; but you may rest assured that it will be quite long enough to thoroughly try your patience. Azaleas are usually increased by grafting early in spring. The raising of seedling camellias is a very simple matter, as the seed germinates freely when sown in pots filled with sandy peat and assisted with a brisk bottom heat. The chief difficulty is usually experienced in obtaining a supply of seed of sufficiently good quality to produce a fair percentage of varieties worth the house-room. The *Cattleya* should be divided just as it is commencing to make the season's growth, as the roots are then active, and the plants quickly recover from the check received. The division must be effected with care, or the plants will receive irremedial injury.

*J. D.*—The specimen is not sufficient for identification. The shoots should not be removed from the cactus unless you are desirous of increasing the stock.

*M. Mc Bride, Trafford Park.*—Botanically speaking, the strawberry is simply a swollen receptacle, as in the case of the "hip" of the rose; but owing to its being convex in form, the carpels are studded over the surface instead of being enclosed in the cavity, as in the rose "hip."

**MYRSIPHILLUM ASPARAGOIDES.**—*F. K.*—The plant you inquire about is known as *Myrsiphyllum asparagoides*, and is grown very extensively in America for the sake of its elegant sprays, which are found of immense value for associating with cut flowers. In reference to its culture, Mr. Fithian, an excellent authority, writes in the *American Gardeners' Monthly*—"It is now used in the cities for decorating, and as affording green sprays for bouquets to such an extent that there is a great demand for it by our city florists. It is very easily cultivated, the seed being sown in boxes of light but rich soil in August, and placed in a close and shaded greenhouse. I saw at one time seed sown in two boxes, one box being placed in a close house, the seed in it germinating very well; the other box was put in a hotbed, the heat being 95°; there it remained for eight weeks, only five or six seeds germinating. Supposing the balance of the seed had decayed, the box was taken out of the hotbed, and placed with the first box. In less than a week every seed germinated and grew at a rapid rate, the plants soon outstripping those in the first box. When large enough the seedlings should be potted off in two-inch pots and placed in a warm house, and kept growing until early spring, when they want a rest, for it must be remembered they belong to the Lily family. After gradually drying place them under the bench, turning the pots on their sides. The first of August they will begin to show life by throwing up long slender shoots of a light purple colour, and looking somewhat like asparagus. They are now just one year old, and want planting out or potting. If they are desired for cut flowers, by all means plant them out; they are tremendous feeders, requiring plenty of room and water

May.

to bring them to perfection. Plant in soil composed of two parts rich manure, two parts good loam, one part old sods, and one part sand. Give plenty of water, never allowing them to become dry; their two greatest enemies are drought and red spider, either of which causes them to drop their leaves, and then they are worthless for cut flowers. Each plant will throw up six or eight shoots, and will need strings to hold them up; twine three or four shoots to one string, and when they have grown to the height of five or six feet they are ready for market. After they are all cut dry off gradually, and give a slight top-dressing of fine but strong manure. Each following year they will increase in value, throwing up more and stronger shoots. While growing they should be often syringed and occasionally watered with liquid manure after being diluted. The second winter from seed they will flower and produce seed. The flowers are greenish-white, and are very fragrant though small. The berry grows to the size of an English pea, and when ripe—in August—is a light red colour, containing three or four seeds which are hard and black.

## TRADE CATALOGUES.

ALEGATIERE, CHEMIN DE ST.-PRIEST, A MONPLASIR, LYONS, FRANCE.—*Catalogue of New Double-flowering Pelargoniums.*

B. K. BLISS & SONS, 34, BARCLAY STREET, NEW YORK.—*Illustrated and Descriptive Catalogue of Potatoes for Seed.*

BRIGGS & BROTHERS, ROCHESTER, NEW YORK, AND CHICAGO, ILL., U.S.A.—*Quarterly Illustrated Floral Work, and General Catalogue for 1876.*

R. BUIST, 922 & 924, MARKET STREET, PHILADELPHIA, U.S.A.—*Almanack and Garden Manual, Seed Catalogue, &c., for 1876.*

H. CANNELL, SWANLEY, KENT.—*Illustrated Floral Guide.*

J. CARTER & Co., 237 & 238, HIGH HOLBORN, W.C.—*Carter's Catalogue of Farm Seeds.*

JAMES COCKER & Co., ABERDEEN.—*Descriptive Catalogue of Vegetable and Flower Seeds.*

S. DICKSON & Co., 48A, MOORGATE STREET, LONDON.—*Select List of Vegetable and Flower Seeds, Potatoes, etc.*

EWING & Co., NURSERIES, EATON AND CRINGLEFORD, NORWICH.—*Rose Catalogue.*

FERGUS FARRELL & SON, 119 & 120, CAPEL STREET, DUBLIN.—*Descriptive Catalogue of Seeds, etc.*

JOHN FRASER, LEA BRIDGE ROAD NURSERIES, LEXTON.—*General Descriptive Seed Catalogue.*

HAAGE & SCHMIDT, KUNST-UND-HANDELS-GARTNER, ERFURT.—*Priced Illustrated Catalogue of Plants; also Catalogue of Seeds, etc.*

HARRISON & SONS, LEICESTER.—*Catalogue of Choice Seeds for the Garden and Farm.*

E. G. HENDERSON, & SON, WELLINGTON ROAD, ST. JOHN'S WOOD, LONDON.—*Illustrated Descriptive Catalogue of Flower, Vegetable, and Agricultural Seeds, etc.*

KELWAY & SON, LANGPORT, SOMERSET.—*Seed Catalogue and Amateur's Guide.*

JOHN LAING, STANSTEAD PARK NURSERIES, FOREST HILL, LONDON, S.E.—*Catalogue of Garden, Flower, and Farm Seeds, etc.*

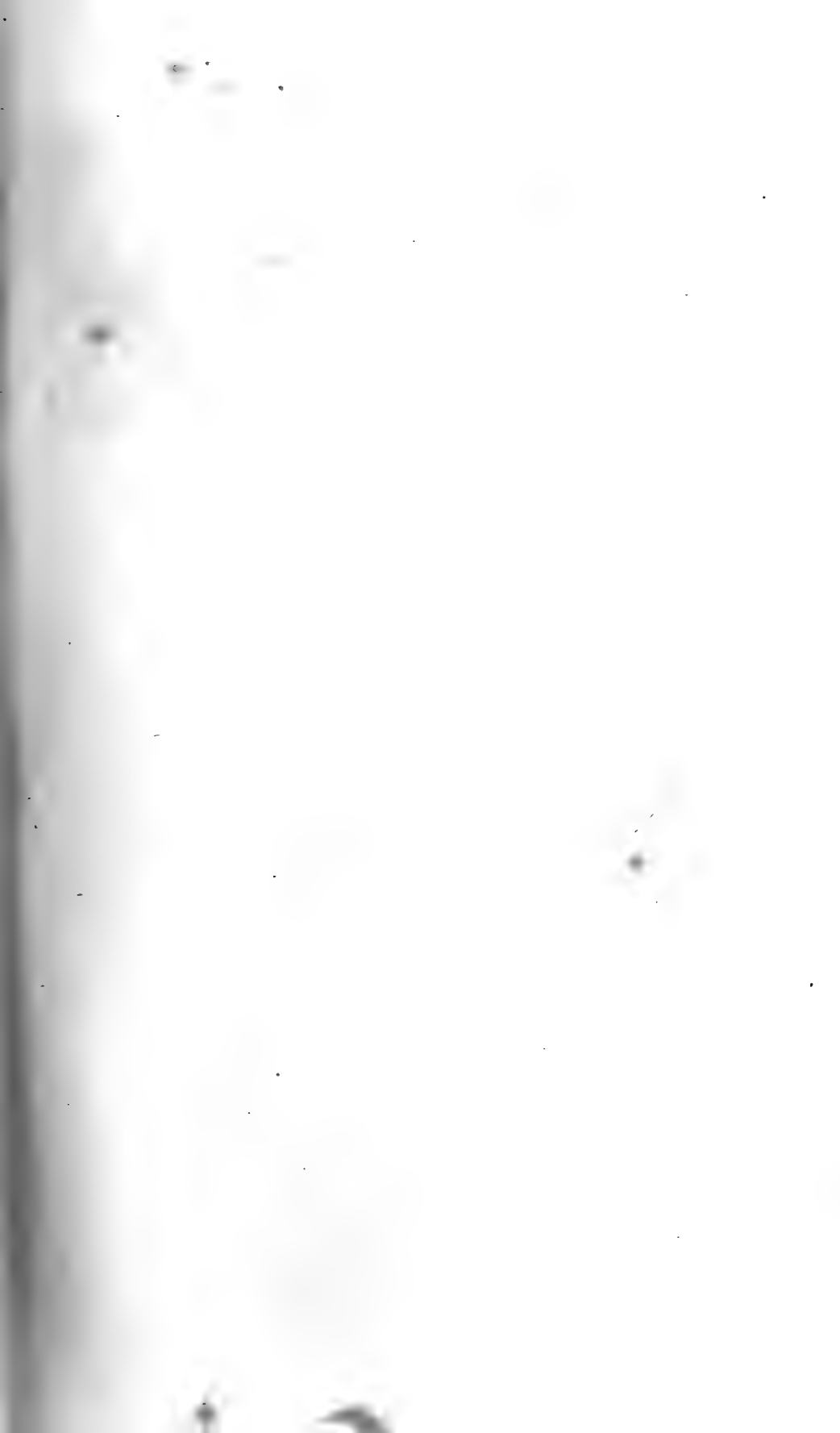
STUART & MEIN, KELSO.—*General Catalogue of Vegetable and Flower Seeds; also Catalogue of Select Gladioli.*

E. Y. TEAS & Co., 255, PEARL STREET, RICHMOND, IND., U.S.A.—*Catalogue of Roses, Greenhouse, and Bedding Plants, Vines, Shrubs, etc.*

CHARLES TURNER, ROYAL NURSERIES, SLOUGH.—*Catalogue of Seeds for the Kitchen and Flower Garden, and for the Farm.*

VILMORIN, ANDRIEUX, & Co., QUAI DE LA MEGISSERIE, PARIS.—*Catalogue of Seeds, Plants, etc.*

B. S. WILLIAMS, VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY.—*Catalogue of Plants, 1876.*





## CALATHEAS AND MARANTAS.

(With Coloured Illustration of *Calathea crocata*.)

BY GEORGE GORDON.



**C**ALATHEAS and Marantas form a very interesting class of stove plants, and as they are so distinct in character from the richly-coloured crotons and dracænas, a few of the finest kinds should have a place in the most select collection of plants remarkable for the beauty of their leafage. They are all of moderate stature, and therefore exceedingly well suited for houses of comparatively small size; more especially as they can be placed between the tall-growing subjects—the dracænas, for example, so as to occupy, practically speaking, very little space. Their chief claims for consideration rest, however, upon the extreme beauty of their broad ample leafage, which, in some instances, is velvety in texture, and barred with various shades of green like the back of the zebra, and in others marked with clear, well-defined lines of white, or crescents of rose and white, on a deep olive green ground. The under surface, in most cases, being of a rich shade of vinous red, adds much to the attractiveness of the plants. The species here figured, *Calathea crocata*, belongs to the section having leaves plain on the upper surface, but it is none the less beautiful, for a full-grown specimen is very effective, and the combination of the pale green of the surface with the bright claret colour of the under side is exceedingly pleasing to the eye. These plants possess, apart from their beauty, considerable interest, for it is from the tuberous roots of some of the marantas that the arrowroot of commerce is obtained.

Those most grown for the sake of the starch, otherwise arrowroot, contained in their tuberous roots are *Maranta arundinacea*, *M. allouya*, *M. nobilis*, and *M. ramosissima*, but neither of these should be grown by the amateur, or indeed in any private collection, for they are really only suitable for a botanic garden.

The calatheas and marantas are so closely allied, that it is not easy, excepting to the botanist, to say where calathea ends and maranta begins, and for cultural purposes they may be considered one and the same. They are all natives of tropical America, and consequently require, for their successful cultivation, the temperature of an ordinary stove, a moderate degree of shade, and where growing freely, liberal supplies of water and a moderate degree of atmospheric humidity. Given these conditions, the amateur will experience no very great trouble in producing first-class specimens. To begin with healthy plants is a point of some importance, but as under good management they increase in size very rapidly, it is not necessary to purchase plants larger than those of which the ordinary nursery stock consists. As they are usually kept in the smallest sized pot in which they can be maintained in a healthy condition, it is, as a rule, desirable to shift them into larger pots when they come to hand, to afford them an opportunity of making a vigorous growth

in the course of the season. A shift into pots two sizes larger is desirable, because they will then have sufficient space for the free development of the roots without being overpotted, and no further shift will be desirable. In subsequent years the stock should be repotted once only, and that should be done in the spring, just as they begin to make new growth. In repotting now the roots must not be disturbed, but when the plants are shifted in the spring the ball of soil should be materially reduced, and the roots trimmed a little, so that they can have all the advantages of a liberal shift, without the size of the pots being materially increased. If it is desired to increase the stock, it can be readily accomplished by dividing the plants when they receive their annual shift. The readiest way of doing this is to shake nearly all the soil from about the roots, and then with a sharp knife separate them into two or more pieces, and pot each piece separately. In much the same manner specimens that have become too large may be divided, and the most promising portion be potted and grown on, and the other part be destroyed. Equal parts of turfy loam and peat, with a moderate quantity of silver sand, forms an excellent compost, and care should be taken to press it firmly between the sides of the pot and the ball of soil. The drainage must be good, and for pots from six to ten inches in diameter, from one and a half to two and a half inches of crocks should be placed in the bottom with a layer of the roughest part of the peat placed over them.

To ensure the full development of the distinct markings and velvety texture of the leaves, the plants will require to be screened from bright sunshine during the summer season, but as the majority of stove plants require shade throughout the summer, they are not in this respect peculiar in their requirements, and no difficulty will be experienced in affording them the necessary protection from brilliant sunshine. A moderate degree of atmospheric humidity and liberal supplies of water to the roots are essential, but during the autumn and winter when they are at rest, the atmosphere should be dry, and the supply of water to the roots limited in quantity. It may be added, that stimulants are quite unnecessary, as clear, soft water is quite sufficient.

A large collection of sorts is not desirable in the stove of the amateur, and of the immense number in cultivation, the following may be specially recommended for their great beauty and distinctness:—

*Calathea crocata*.—A dwarf-growing species, with bright green leafage, and richly coloured inflorescence.

*C. zebrina*.—A strong-growing species, with large gracefully arching leaves, barred with shades of olive and green. It is remarkably handsome, and one of the best of the strong growers for the amateur, because of its free growth and the facility with which it can be grown into a good specimen.

*Maranta albo lineata*.—A small grower, the leaves dark green, striped with transverse lines of pure white.

*M. fasciata*.—Another dwarf-growing kind, the leaves cordate and marked with broad bands of white on a green ground.



*M. Lindeniana*.—A free-growing species, with oblong leaves, blotched along the side of the midrib with yellowish green.

*M. pulchella*.—A very handsome species, of medium growth, the leaves oblong, and marked with alternate bands of olive and light green.

*M. roseo picta*.—One of the very finest of the genus, and of erect growth. The leaves are obicular, of a deep glossy green, with rose-coloured midrib, and bands of the same colour midway between the midrib and margin.

*M. tubispatha*.—An elegant species; the leaves regularly blotched with brown, on a pale yellowish green ground.

*M. Veitchi* is a strong erect-growing form, with large ovate, elliptic leaves; the surface of the leaves is of a deep glossy green, marked along the side of the midrib with crescent-shaped blotches of pale yellowish green; the under side is of a rich reddish crimson colour, and as the markings show through, the effect is remarkably good.

*M. virginalis*.—A desirable form, with broadly ovate leaves of a pleasing light green shade, and marked with greyish white.

## CHOICE CONSERVATORY PLANTS OF NOBLE ASPECT.

BY JOHN BURLEY, F.R.H.S., ETC.,

Pembridge Road Nursery, Bayswater, W.



IN this communication it is my intention to make a few remarks on Agaves and Yuccas, which constitute a very valuable class of plants for the decoration of the conservatory. At the same time I shall refer to the Strelitzias, Phormiums, and a few other plants remarkable for their nobility of aspect. It is not now necessary to speak of the value of ornamental-leaved plants for the decoration of the conservatory, as that is now generally recognized, but I would say the plants here referred to are so distinct and striking in character, that they are of the utmost value for associating with subjects remarkable for their grace and elegance.

**YUCCAS.**—I will commence by drawing attention to these, as being tropical in character, and having a telling effect everywhere. I shall pass over the hardy varieties with just a few remarks particularly addressed to those readers who have a small glass erection built over a flat roof at the back part of their residences, to block out some unsightly object (and there are many such built for that purpose in London), and no means of heating it. Here they will find in the hardy Yuccas what will at once answer their purpose admirably, to give to the arrangements a slightly tropical character. Such kinds as *Y. filamentosa*, both the green and variegated variety, *Y. flaccida*, *Y. glauca*, *Y. recurva*, and *Y. glaucescens*, are all cheap and quite hardy. But for the conservatory we will recommend *Y. aloifolia*, an aloe-leaved variety, introduced into this country from

the West Indies, and the variegated variety of the same; also *Y. Stokesii*, another variegated kind, full of grace and elegance. And we must not forget that good old kind, *Y. gloriosa*, introduced from America, with its handsome bold erect habit and its pale yellow inflorescence. Contrasting nicely with these is the slender-leaved variety *Y. tenuifolia*, brought from Malta, and *Y. serrulata*, with its still narrower foliage, from Carolina. But *Y. quadricolor* is about the most graceful and elegant of all the varieties of this family. It is a variegated sport from *Y. draconis*, a drooping-leaved kind, introduced also from Carolina, and for its beauty and general excellence for decorative purposes should be in every conservatory. There are also several very beautiful kinds, of more recent introduction, but as yet expensive, such as *Y. alba spica*, a very attractive variety, *Y. obliqua*, and *Y. concava*. But I have named enough to help readers to a selection, and the kinds first named are very reasonable in price, and admirably adapted for our purpose; so I will pass on to their cultivation. The first point is the compost; and the best will be that prepared of three parts yellow loam, and one part sharp sand and leaf-mould, and used in a rough state. Let the pots for them be well drained, that is, quite a sixth part of the pots filled with crocks, and over these let some rough stuff be placed to keep them from being choked up. I will also add, let them be potted firm. In watering them it will be only necessary to keep the soil just moist even in the summer, and in the winter let water be given very sparingly.

AGAVES must next have consideration, for they are exceedingly well adapted for large conservatory decoration, although perhaps a little too stiff; though that does not apply to *Agave geminiflora*, otherwise *Bonapartea juncea*, for it is all grace and elegance, and a plant that should be grown in every warm conservatory. It is of slow growth, taking many years to get to even two feet in height; but its pendulous habit and close growth make it a beautiful front-row plant, and standing, as it should do, on the top of an inverted pot, it shows to great advantage; for the foliage, which is dark green and rush-like in form, springs up from the centre of the plant, and as the first growth gives place to fresh growth the leaves fall evenly all around, hanging, in fact, all over and nearly hiding its own pot as well as the inverted one. It came from Peru. *B. filamentosa* is also another good variety, and equally attractive; they both grow well in soil composed of equal parts of leaf-mould, peat, and sand; they require, especially in the winter and autumn, to be watered sparingly; that is, just keep the soil moist, and no more. A few of the best of the agaves of rigid growth are *A. americana variegata*, *A. applanta*, *A. glauca*, *A. picta*, and *A. Verschaffelti*. These grow freely in a mixture of turfy loam, sand, and crocks broken up rather small. They should remain in the conservatory or greenhouse throughout the year, and during the winter be kept dry at the roots.

THE NEW ZEALAND FLAX, or FLAX LILY of the colonists (*Phormium tenax* of the botanists) must now be noticed. It resembles in its growth an enormous Iris, which is the best thing I can liken it to. It is quite hardy in the south of England. I recollect a

plant in a nursery at Plymouth, more than twenty-five years since. It was then growing in front of the residence, on a south aspect. The plant was, as near as I can now recollect, fully ten feet high and quite as broad, and it grew so thick that it would at times get over the bounds of the border on to the walk, when it was cut off and taken away in bundles. The border it thus grew so luxuriantly in was mostly composed of partly-decayed slate, stones, and yellow loam; and, owing to the protecting nature of the leaves, the border was as dry as dust, and was so at all times; so that will teach us pretty well how to manage it. There is no doubt, though, that the roots travelled some distance, and if moisture was not found near the plant, the roots soon wandered away and collected it elsewhere; for it is very evident that the plant must have moisture at the roots, especially when grown in pots. There are several variegated varieties of this plant exceedingly handsome, with broad bands of yellowish white alternating with the green up the leaves and stem. They are at present very expensive, but in time I hope they will be within the reach of all lovers of foliage plants, for all should treat themselves with one or more as soon as they can. I have found them do well in pots in a mixture similar to that recommended for Grevilleas, and I have found them to have a great liking for water in the summer season, and a partial drying-up, or season of rest in the winter, beginning to give them water again about this time, when they begin to make their growth. The finest of the variegated forms are *Phormium tenax variegatum*, *P. Veitchi*, and *P. Colensoi variegatum*.

GREVILLEA ROBUSTA and its varieties are beautiful foliage plants; the foliage especially is exceedingly graceful and fern-like in its character; it has a slender stem and a branching habit, and for a background plant it is admirably adapted, owing to its graceful drooping growth. It is also very hardy, and rarely injured by a few degrees of frost, which is a great point in its favour. The leaves are a pea-green in its early growth, changing when mature to a light green with a central rib of dark green. It is from New Holland, as is *G. concinna*, another pretty variety, but with foliage somewhat smaller. The Mountain Grevillea (*G. montana*), from New South Wales, is a dwarfer kind, but exceedingly pretty, and nearly hardy, and in its native home grows on the mountains, with its roots here and there projecting out amongst the stones. *G. robusta* is the best kind for our purpose, where only one is required, as it is of free growth and very easily managed. The soil best suited for them is a mixture of one-half silky loam broken into small lumps, one-quarter turfy peat, also broken in lumps, and one-quarter leaf-mould, quite decayed manure, and sand; the whole to be well mixed together and used rough. It is a good plan to break up some crocks small and mix with the soil, when the plants get any size, as the roots cling around them, and seem to like some stony or brick-like material. These plants should be liberally watered from February to September. It is advisable then to give them but little for a month or two, and begin to give it more liberally to them again when they begin to grow, which occurs about Christmas.

They then shed their leaves, and the young growth immediately follows. January is also the month to repot them, as they make their fresh roots and their young growth at the same time; so by giving them fresh soil then you are giving them what they naturally require.

*BEAUCARNEA RECURVATA* is well adapted for our purpose, not only for its elegant and graceful appearance, but also for its singular habit of growth. On the surface of the pot there is a large mass, as much resembling an elephant's foot as anything I know, both in colour and size, and springing from the centre of this mass is an upright tapering stem, which gives out a plentiful supply of graceful ribbon-like leaves, which fall evenly on all sides, like *Dracæna australis*. The foliage is of the richest green and is both long and graceful. They require the same treatment as *Dracænas*, and it is an important point to give them plenty of water at all seasons. There is another variety equally desirable, named *B. glauca*. I must add that both kinds are very expensive, but, for all that, I should not be doing justice to the subject in hand to pass them over.

The *STRELITZIA* must now be considered. It is a family quite tropical in its character, with broad erect foliage; but the plant is seldom seen more than three feet in height, so is suitable for a low conservatory. It also blooms freely, so is doubly desirable; and such lovely bloom too, especially in the case of *Strelitzia regina*, the colour being brilliant scarlet, and resembling in shape a gladiolus, but much larger and broader. There are six well-known varieties of this plant, and all from the Cape of Good Hope, viz., *S. regina*, *S. angusta*, with banana-like leaves; *S. ovata*, with oval-shaped shiny leaves; *S. farinosa*, with a mealy-like down over the stem and leaves; *S. angustifolia*, with narrow long leaves; and *S. parvifolia*, the dwarfiest of the whole, with narrow rush-like leaves. As I before said, all are from South Africa, and will all thrive well side by side with Cape heaths; but they require somewhat different soil, viz., yellow turfy loam, brown peat, sand, and leaf-mould, in equal quantities. Let the pots be well drained, and from March to October supply them with plenty of water; and during the winter months give them a season of rest; but even then do not let them be distressed for want of it, but just give them enough to keep them from becoming *dust-dry*; they will then quite ripen and harden themselves. And in the spring, before watering them freely again, give them a top-dressing, and they will then speedily start and grow, and will be almost certain to flower freely forthwith. I will just add that they like plenty of sunshine and air at all seasons.

The *DAMMARIA* will take nearly any amount of rough usage, and still look well. All the varieties are fine-foliage plants, and all but hardy. They have large palmate leaves, and an upright sturdy growth, with leaves of a light refreshing green in a young state, gradually changing to a rich velvety green. *D. australis* is the cowrie-tree of New Zealand; *D. orientalis*, the pitch-pine of Amboina, is also known by the name of *Agathis loranthifolia*. *D. Moorei* is an excellent kind, with broad, spreading, fan-like

leaves and plume-like top; this came from New Caledonia. *D. macrophylla*, otherwise *lanceolata* (for it is known by both names), is a charming variety from Queen Charlotte's Island. *D. obtusa* also is a very hardy kind, from New Hebrides. But all the kinds are worth having and moderate in price, and will grow and do well in most unfavourable places, where many plants will not. They do well in a free, open, sandy soil—say three parts turfy loam and peat in lumps to one of rough river sand. They like plenty of water at the roots when growing, and to be well syringed over the foliage every evening in the summer.

ALPINIA NUTANS should be grown for variety's sake; it has an upright tropical habit, with a dark green stem and long broad foliage, resembling a *Maranta* very strongly in its general appearance, but reaching the height of five feet or more, with, in large plants, quite as much through it. The stems spring from a tuber-like crown, resembling ginger, and it grows freely in any situation in the conservatory; but if kept in a shady spot in the summer the foliage is nicely coloured, with a velvety green on a lighter green ground, giving the plant a very attractive and rich appearance. They grow and do well in soil similar to that recommended for *Strelitzias*, and they like plenty of water at all seasons. They are very easily propagated by divisions of the root, which, if taken off with a heel, and kept shaded for a short time after potting, will soon make the foundation for a good plant.

## VEGETABLES OF APRIL AND MAY.

BY A KENTISH GARDENER.



HERE is usually such a scarcity of vegetables in middle-class gardens during April and May, that I feel tempted to ask those readers of the *FLORAL WORLD* who depend more or less upon home supplies, whether during these months they have had a sufficiency. Those who can answer the question in the affirmative are in no need of advice, so far as the production of spring vegetables is concerned; but in all cases where a negative reply must be given, it may be assumed that something has yet to be learned, and that some amount of attention may well be bestowed upon the few remarks that I am about to make. I am well persuaded, that, after my long experience, I shall be able to say something useful to those who have not been able to supply the table with vegetables so well as they could wish.

So far as my experience has gone, the period embraced by the months here mentioned is the most trying time of the whole year to the kitchen garden. Brussels sprouts are practically over by the end of March, and the kales run to seed so quickly after April is fairly in, that they cannot be depended upon for supplying the table for any length of time after the beginning of the month. Broccolis form a crop of immense value for the spring supply, when the weather in the course of the winter is not severe enough to injure

them. But sometimes they are destroyed in a wholesale manner by the weather, especially on cold wet soils, and under the most favourable circumstances they cannot be depended upon for supplying the table after the middle of May. In early seasons they are over by the first week in May. There are, according to the seed catalogues, broccolis fit for the table in December and January, and in May and June; but the weather must be mild indeed if good heads can be cut in either of the two first-mentioned months, and the season must be very backward for the supply to be prolonged until the latter part of May. The purple sprouting broccoli, a most valuable vegetable in its season, is also over early in May, and it must be confessed that few indeed are the vegetables available for the supply of the table in the months to which reference has here been made.

The vegetables generally considered as belonging to the late spring months, but upon which little dependence can be placed, have been thus briefly alluded to, and we are now brought face to face with the question, What are the best vegetables for April and May? This question will naturally suggest itself to the minds of many readers, and although beset with difficulties, I will do my best to answer it in a manner that will be of real service to my reader.

*Broccolis* and *Kales* should, of course, be had as long as they are in season; but, as will have been gathered from the foregoing remarks, the kales cannot be depended upon any length of time in April, nor the broccolis long in May. One of the best of the kales for spring is the *Jerusalem*, which is much longer in running to seed than the others.

First-class *Seakale* is usually considered a luxury, but there is no good reason why it should be regarded as such, and I would strongly recommend its being grown as one of the staple vegetables of April and May. Some of the readers of the FLORAL WORLD will naturally enough say, "It is all very well to talk about growing seakale as a staple crop, but where is the fermenting materials to come from?" But let me assure my friends that no fermenting materials are necessary in the production of seakale in April and May. It begins to grow freely in April, and with no more trouble than is occasioned by turning large flower-pots over the stools, the finest seakale may be had. You have simply to mark out a given space, and plant the seakale from two and a half to three feet apart each way. To form large clumps quickly, two or three roots may be put in each; and if there are no roots, seed may be sown in clumps, and the plants in due course be thinned to three to each. It is not too late to sow seed now, provided it is done quickly.

To insure a supply of the finest seakale, it is simply necessary early in March to turn a pot, or the half of a cask that has been sawn in two, over each crown. About one half of the pots should have soil or loose litter heaped over them to keep the roots cool, and prevent them starting so early, and making such rapid progress as those covered with pots fully exposed to the sun. The holes in all the pots must of course be closed to exclude the light.

Autumn sown *Cabbage* is also very valuable, and I have found it

an excellent plan to fill a rather large bed with plants put about a foot apart each way, and to draw from it as early as the plants are large enough to send to table. *Atkins's Matchless*, and other of the small-growing early sorts, are the best, and if the seed is sown in the last week of July, and the plants put out as early as possible, the crop will be most useful for supplying the table before the early summer cabbages turn in. Sometimes cabbages raised from seed sown in July will bolt in May; but, as a rule, they will be of a nice size for cutting, and if even they do start, they may be turned to good account, by being cut and sent to the kitchen just as they are beginning to move.

Another useful vegetable for April and May is the *Winter Spinach*, which should be sown in larger breadths than is usually the case in middle-class gardens. To insure a good supply of spinach throughout the spring, three sowings of the *Prickly Seeded* must be made in the course of the autumn, the first about August 7, the second a fortnight afterwards, and the third the first week in September.

It must not be forgotten, that the *Asparagus* is one of the very first of the April and May vegetables. To yield a constant supply the beds must be of large size, and as an inducement to owners of middle-class gardens to plant this vegetable more extensively, I would direct special attention to the fact that it may be grown with less expense than is generally considered to be necessary. As a matter of fact, it may be planted in ordinary soils, without their undergoing any preparation beyond receiving a dressing of manure, and being trenched over two spit deep. After the plants are well established, keeping the beds free from weeds, and applying a moderate dressing of manure annually in the winter, are all that is necessary to maintain them in a productive state for an indefinite period.

I have not referred to potatoes and other vegetables in the root-house, but I think sufficient has been said to show that by a proper course of cropping the table may be well supplied with excellent vegetables in April and May without the aid of a forcing pit, or, indeed, any other expensive appliance.

## A NOTE ON EARLY-FLOWERING PELARGONIUMS.



WAS much interested in Mr. Oubridge's paper on the cultivation of Gauntlet geranium, for this fine old variety is one of the most useful the amateur could grow for supplying flowers during the winter and spring. The early-flowering pelargoniums generally are special favourites of mine, for I have long been convinced that they are unsurpassed for producing a rich display of colour in the conservatory during the spring months. A higher recommendation than this it would be impossible to give them, and therefore to say more in their favour is quite unnecessary.

I shall not attempt to pen an elaborate essay on their cultivation,



for a very few words will suffice to convey a good idea of their cultural requirements. I will commence by observing that to ensure their flowering early the cuttings must be struck early in June, and when nicely rooted be potted off separately. They should be put into three-inch pots, and as soon as the roots run freely round the outside of the ball, shift them into others one size larger, as five-inch pots are quite large enough to enable them to produce large heads of bloom. Throughout the summer they should be kept in a well-ventilated frame, and be supplied with water according to their requirements. On the approach of autumn—say the end of August—they must be placed in a light position in the greenhouse, and remain there throughout the winter. The only stopping and training necessary is to pinch out the growing point as soon as they are established in the pots in which they are to bloom, and to neatly tie out the side branches when sufficiently advanced in the spring.

For very early flowering plants two years old are preferable, as they naturally come into bloom earlier than those struck the previous season. Amateurs, by purchasing now small plants in three-inch pots, may have a beautiful display next spring without very much trouble or expense. The best course, when they come to hand, will be to place them in a sunny position out-of-doors, and when the young wood assumes a brownish colour, prune them back to where the wood is quite firm. In due course they will produce a new growth, and as soon as the young shoots are about an inch in length turn the plants out of the pots, reduce the ball of soil moderately, and return them to pots of the same size. When they are nicely rooted shift them into six-inch pots, and in other respects manage them as advised for the younger plants. It only remains to be said that a compost prepared as advised in Mr. Oubridge's communication should be employed, and that to have the plants in bloom early in the season, they must be placed about the middle of February in a light airy structure, where they can have the advantage of a temperature of about 50°, increasing as the season advances to 60°.

Six of the very best show pelargoniums for early flowering are, *Duchess of Edinburgh*, *Crimson King*, *Captain Raikes*, *Kingston Beauty*, *Queen Victoria*, and *Triomphe de St. Mandé*. Two of the fancy varieties, namely, *Fanny Gair*, and *Duchess of Teck*, are also invaluable for early decorations, as well as for specimen culture.

AMATEUR.

### SEASONABLE NOTES ON SEED-SAVING.



SEED-SAVING is generally conducted in a very haphazard manner in private gardens. It is a difficult task to grow a good crop from bad seeds; hence the rapid degeneracy of many varieties of garden plants when grown for a succession of seasons from home-saved seeds. It should not need an array of facts to satisfy our readers that mere shades of difference in the inherent qualities of



related varieties of garden plants oftentimes make all the difference in the value, and this to an extent that is the very life of the seed trade itself. We may take for an example a variety of broccoli that will not flower until very near the time when cauliflowers are ready for the table. Such a broccoli is then of immense value, and by every day that it flowers earlier or later than the season it is grown for, by so much is its value lessened; yet, as respects the plant, how slightly does it differ in constitution from others that are ready with the glut in the month of April! The battle of the early peas, in which we were so much interested a few years ago, turned upon the question of a few days only in the date of gathering the first crop. Yet those few days were of such immense importance that the relative commercial value of the competing varieties depended almost wholly upon the decision as to their respective earliness. It is to be expected that seed-growers should understand these points, and so they do. Nine-tenths of the "novelties" offered us are simply improved strains of old-established varieties, the result much more of the employment of keen eyes and experienced judgment in selecting than of hybridizing or cross-breeding. It is because the seed-grower makes it his business to secure true stocks, and to originate improved stocks, and to prevent degeneracy, that, as a rule, it is far better to purchase seed for private gardens than to grow it at home, and this is more especially the case in respect of nearly-related varieties of extensive families of kitchen-garden plants. Not only has the seed-grower the advantage of experience and skill in his own particular line, but he has the advantage of circumstances; for it is a matter of fact that many of our most valued esculents can only be kept true to the particular characters for which we value them by growing the seed in large quantities; for when small and far-separated patches or single plants are left to seed it commonly happens that the strain is lost.

The necessity of growing large quantities of particular varieties in order to maintain their special characters intact, is especially exemplified in the case of turnips, cabbages, and broccolis. A few plants of any of these left to produce seed in a private garden will no doubt produce as much, perhaps more, than the same number of plants forming part of a ten-acre piece. But it is extremely likely that in the end it will prove that the seed was not worth saving or sowing, for the characters have gone; none of the sorts have the qualities of their parents, and to secure the varieties again in their integrity there must be another purchase of the seedsman. Let us suppose that in one garden a small patch of Scotch kale has been left to produce seed. In another garden close by, there happen to be two or three sorts of cabbage in flower at the same time. The bees will carry the pollen to and fro and mix all the races together. The result will be a nondescript race, and the several possessors in a state of perplexity at the disappointment inflicted upon them, seeing that they "saved their own seed." It is not to be supposed, of course, that the man who grows seeds systematically and skilfully can secure for his crops exemption from insect agency. The simple truth of the matter is, that while the bees and other insects that

visit flowers do harm to the private grower by destroying the purity of his varieties, they do good to the other by preserving the purity of his varieties. When a piece of, say, ten to twenty acres of broccoli is grown for seed, the bees are busy upon it all day long from first to last. They do not carry the pollen to impregnate other varieties and spoil them; they distribute the pollen where it is wanted, because they have a great pasture, and therefore need not quit it for food, and therefore do not carry the pollen away. We do not, of course, account for the actions of every individual bee, nor affirm that crosses do not occur where seeds are grown in large quantities; but it is a matter of fact that, in a broad and practical view of the subject, the case is as we put it. Those who grow seed for the market have many advantages over those who grow for their own use, and, in respect of certain kinds, the purity of the stock depends in great measure on the quantity grown in any one particular spot.

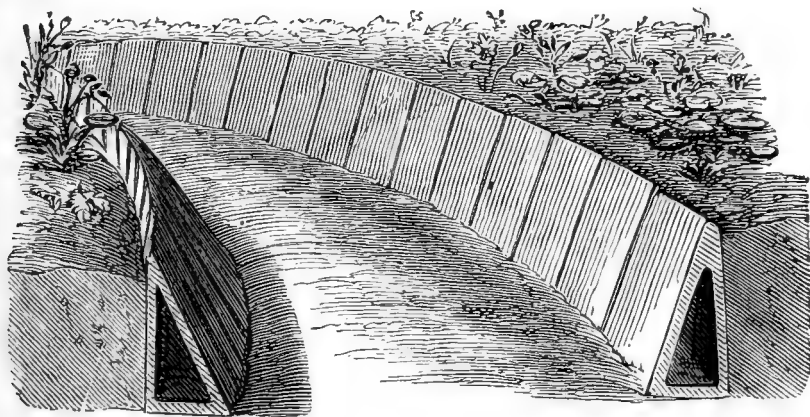
In saving seeds in gardens, the greatest care should be taken to maintain the purity of good stocks. One mode of procedure, having this end in view, is to allow only one amongst many closely-related varieties to be in bloom at the same time, especially of things like brassicas that freely cross and intermix. Another important matter is to secure the best sample possible by boldly thinning out the flower-stems, and reducing the ultimate bulk of seed; for almost every plant produces more fruit than it can mature perfectly, and the more desirable it is that the quality should be good, the more necessary it is to keep a watch that there is no excess in quantity. As a rule, the strongest and most fruitful plants of every kind are the produce of the *heaviest seeds*. The specific gravity of a seed is to a great extent a measure of its relative vigour, and a high specific gravity of the seed is as truly worth aiming at, by careful selection and judicious cultivation, as any other quality that can be named. Of course, when seeds of any kind are grown in great breadths, thinning the crop is out of the question; but something may nevertheless be done to prevent deterioration, as for example, the heaviest seeds may be separated for the seed crop, and the rest may go for green crops and consumption. S. H.

### HIBBERD'S TRIANGULAR EDGING TILE.



**T**HIS tile was designed for a special purpose; but, having been seen by many, has acquired a certain subdued sort of fame, and is occasionally the subject of inquiry. It is in no sense ornamental, but it is peculiarly substantial, affording great support to the border, and, being hollow, it does not retain moisture, and, therefore, it is not injured by frost. Those that have been in use six years at Stoke Newington have not suffered so much as a chip, while other kinds of tiles in the same garden have literally rotted away through the action of frost upon

them. This tile is made of common red ware, it measures twelve inches in length, twelve inches deep, and seven inches wide at the base. It is an irregular triangle, the front side being the longest,



HIBBERD'S TRIANGULAR EDGING TILE.

which adds to its firmness, for it literally leans against the border. It is only fit for the kitchen garden and reserve ground, and, though destitute of ornament, it has a neat and respectable appearance. In a place where ducks have access to the garden, this tile in an effectual protection to the borders, for the ducks cannot ascend its sloping front.

The tiles were made to our design by Mr. Looker, of the Norbiton Potteries, Kingston-on-Thames; the cost was 9d. per foot run.

S. H.

## ZONAL PELARGONIUMS FOR AUTUMN AND WINTER FLOWERING.

BY JOSEPH MACDONALD.

**T** may well be questioned, notwithstanding all that has been written upon the subject, whether the merits of the zonal pelargoniums as pot-plants are properly understood by the majority of amateurs and gardeners, for in very few places do we find a sufficient number of them grown. My experience of their utility for autumn and winter decoration has led me, not only to increase their numbers, but to cultivate them in the specimen form. In fact, I hail them as a boon, for they come in so admirably at a time—August, September, October, and November—when other flowers are scarce, that they stop a gap which every one knows occurs amongst indoor flowers in these months. The labours, therefore, of supplying flowers throughout the autumn and early in the winter are considerably reduced by the adoption of these subjects, for they are cheap to buy, easy to culti-

June.

vate, and very pleasing when grown. As to brilliancy of colour, variety, and freshness, there is nothing to surpass them. Moreover, they are so accommodating, that you may grow and flower them, either as small plants for the drawing-room, or as monster specimens for the conservatory stage.

Those whom these persuasions may induce to cultivate them are advised to begin at once with the very best sorts they can obtain; fine sturdy plants for autumn-flowering may be insured if the cuttings are put in not later than the middle of June. The pots must be well drained and the soil light and sandy; they should have a sunny airy shelf in the greenhouse, and be shaded for two or three hours in the middle of the day. If the cuttings are not soft and sappy, they would do better without shading; but as they are likely to be young and soft at this time of year, shading may be resorted to as a precaution against their being burnt up. If put into very small single pots so much the better, as then they will not want shifting until they have filled the pots full of roots. Many of the zonal geraniums are constitutionally weak, that is to say, they cannot endure sudden excitements of temperature or strong stimulants. A high temperature will create weakness, and strong stimulants will generate all sorts of deformity and spots in the leaves, and sometimes spoil the beauty of the flowers. It is, therefore, best to work out a medium system of culture, as the one most likely to produce the earliest results. Such, however, is the course I should advise those who handle them for the first time to pursue; those who understand them well, of course, do not require such advice, for one of the best lessons learnt by practice is the power of discriminating the limits of possibility.

Those who have to buy plants should secure them at once; and, as probably they will be in three-inch pots, it will be well to shift them into a size larger, and so continue shifting whenever the pots are full of roots until six weeks before they are wanted to flower. They should have a soil composed of loam and leaf-soil equal parts, with a pint of sharp silver-sand to every peck of soil. Be sure and drain well, and pot firm, and do not allow any flowers to expand upon the plants until after the last shift is given.

A light airy greenhouse stage is the best place to grow them, especially if plenty of water can be strewn about in hot weather. There must be no syringing of the leaves, for that is injurious. If a good form of plant is desired, the leading shoot must be topped to insure the production of side-shoots. These side-shoots must be again stopped after they have grown out eight inches, if a specimen plant is desired. In such a case the form only of the plant should be studied the first season, as it will be good work if a perfect ground-work for the future plant can be formed the first year. The easiest and quickest way to form specimen plants is to plant them out the first season in good rich soil, and pot up again in autumn. I do not advocate that plan myself, because the roots, having an unlimited space when planted out, are likely to get out of bounds, so that to put them into a reasonable-sized pot is impossible afterwards, except by considerable mutilation. The same objection is to be

made against planting out those that are wanted to flower the same autumn, which some advise. I find that the more luxuriantly you grow them the less they flower; and as most of them will flower superbly in a small state, a strong rank growth is not needful. So that, although growing them in pots in all the stages is attended with a little more labour, the results obtained more than repay the cultivator for the extra attention bestowed.

To obtain moderate-sized plants suitable for decorations, they should be struck in the autumn, wintered singly in five-inch pots, and in March or early in April their summer culture should commence. First, shake clean away every particle of old soil, and then pot in fresh soil in the same size pot. The leading shoot must be topped if it shows an inclination to become long-legged; if it is bushy, and throwing out side-shoots, which many from their natural habit will do, it must not be headed back at all, but be encouraged to grow on in its own way. To obtain well-formed specimens, the growth of the plants must be regulated according to the form they are intended to present. This is best done by neat sticks and ties; but avoid one-sided or the flat-surface form, for there is nothing natural about either, and a geranium or any other plant never looks well when suffering all manner of contortions inflicted by the trainer. Ugliness of contour will spoil the finest variety ever seen.

Presuming that these autumn-struck plants were shaken out and repotted on the 1st of April, they will require another shift into a size larger pot every six weeks until they have reached a nine-inch pot (inside measure), which is large enough for any ordinary purpose. A very suitable sized plant may be obtained by keeping the autumn-struck cuttings in store-pots all the winter, and then, as soon as the bedding plants are turned out of the houses, and there is room to spare, let them be potted off, and shifted on into six and seven inch pots. Such plants are particularly useful for the decoration of vases, flower-baskets, and entrance halls, as well as for the conservatory stage; in fact, in my own case, they are the most useful of all sizes, although the specimen plants serve to fill up the house at a dull season.

As a rule, the zonal geranium is not benefited by stimulants, and it is in the power of any one who does not grow them for exhibition to produce a magnificent display without the aid of liquid manure or anything of the kind. Still, for all that, in the hands of those who can use weak liquid manure with judgment, it serves a useful purpose, in strengthening the plants when the cultivator is restricted as to pot-room.

The only point I think now requiring notice is the keeping of old plants through the winter, for, unless they are properly dried off in the autumn, it is impossible to keep all parts of the plant alive through the winter, so as to present an even and uniform appearance of growth to work upon for specimen plants the next summer. I find the best plan is to dry them off gradually when they are removed from the conservatory to make room for the chrysanthemums. Let them have a light airy spot in a cool house, giving them only sufficient water to keep them alive, and defer the cutting down of the plants

until the middle of March, when, with the aid of a little more water and the increased temperature of the season, they will begin to break naturally. If they are cut down in the autumn while in a green succulent state, you are liable to lose the old plant altogether, and, if not the whole of it, perhaps two or three of the side-shoots, which renders the specimen not a specimen, and, in fact, unfit for any purpose at all for a long time afterwards. In cutting down, do not cut too low, as they are at all times liable to die back an inch or two, and if cut higher than actually required, it is easier to rub away the top bud than it is to supply one where there is no growth to do it.

The undermentioned comprise the best of those at present in cultivation, for pot culture:—A. F. Barron, Coleshill, Corsair, De Lesseps, Diana, Harry King, Jealousy, King of the Forest, Lord Macaulay, Richard Cœur-de-Lion, Rienzi, Purple Gem, Purple Prince, Apple Blossoms, Lady Emily, Master Christine, Madame Rendatler, Mrs. F. Burnaby, Richard Wallace, Rose Bradwardine, Alice Spencer, Beau Villageois, Miss Gladstone, Madame Jean Sisley, Pioneer, President Thiers, Queen of Beauties, White Princess, White Clipper.

The four best to grow for producing a succession of flowers throughout the winter are—*Vesuvius*, scarlet; *Master Christine*, pink; *Jealousy*, orange-scarlet; and *White Clipper*, pure white.

## THE HYDRA.

### A GARDEN STUDY FOR THE MICROSCOPE.

BY W. B. PRITCHARD.

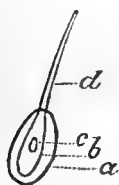
*Continued from p. 305 (1875).*



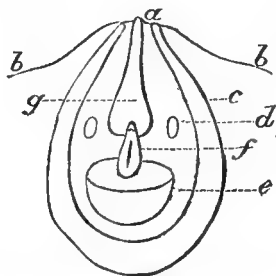
LET us now, with the help of Dr. Deakin, examine more carefully into the structure of these little animals, which are endowed with such wonderful powers, in order that we may better understand its economy and habits; and a few remarks and illustrations from the investigations of Corda will be perused with interest. This author has examined most carefully the *Hydra fusca*, and he considers the arms (*tentacles*) to be long, pellucid, extremely delicate tubes, of a membranous structure, and that they contain a semi-fluid albuminous substance, which in certain definite parts swells into wart-like knots, of a denser substance, and that these are arranged in a spiral manner, into which are attached numerous organs of touch, and also instruments by which it holds its prey. Within the tube, and running beneath these knots, are four longitudinal bands of muscular fibre, of a yellowish colour. With these fibres it is thought that the animal has the power of extending the arms. These muscular fibres are united to each other by transverse muscles of the same colour, and Corda considers that by these the animal is enabled to contract its arms, and fold them up like a fan.

In the wart-like knobs of the arms are, according to Corda, the

organs of touch or sensibility. Each of these is formed of a delicate little sac, which incloses another with a minute cavity in its centre. Every one of these curiously-constructed bodies terminates in a very delicate hair-like process, and form the supposed organs of touch. Amongst each group of these organs are others, but less numerous, and differently constructed. Corda named these darts, and considers them the organs by which the animal holds its prey. This organ is formed of a little, pellucid, oval sac, embedded in the substance of the knob, and has a small opening at the apex. At the bottom of this sac



Organ of Touch, highly magnified.  
(After Corda.)—*a*, first and *b*, second sac; *c*, minute cavity; *d*, terminal filament.



Prehensile Apparatus, highly magnified.  
(After Corda.)—*a*, aperture; *b*, epidermis of tentacle; *c*, first sac; *d*, second sac; *e*, saucer-like body (*vesica*); *f*, oval base (*hastifer*); *g*, dart.

is a saucer-shaped body, upon which is placed a solid oval granule, and this supports a long, sharp-pointed spiculum (*sagitta*), composed of calcareous matter, and is capable of being pushed out and in through the aperture, probably by the inflation or contraction of the little bladder, to which the oval base of the dart (*hastifer*), is attached.

When the Hydra is waiting for its prey, the darts are all protruded, so that its arms become formidable weapons, furnished with their numerous spikes. But, more than this, these spikes appear to be poisonous also; for any unfortunate animal once touched by the Hydra immediately becomes benumbed, and soon dies, or but slowly recovers from its effects.

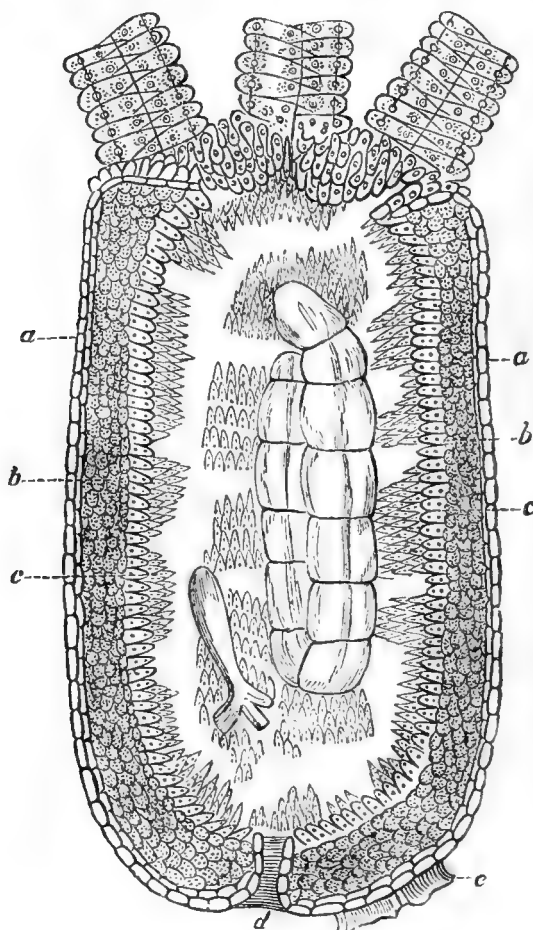
The mouth of the Hydra is at the base of the arms, and is furnished with lips capable both of inflection and protrusion. Their structure is similar to that of the arms, but they appear to be endowed with extraordinary muscular force, considering the size of the animal.

The body of the Hydra is not furnished with either darts or organs of touch, but, according to Corda, is covered externally with a membrane formed of two layers, and that between it and the alimentary canal is a muscular layer, composed of dense coloured cells, having the appearance of being filled with minute granules.

The innermost layer, which lines the whole alimentary canal from the lips to the arms, is divided at intervals into folds forming numerous compartments. The villi of which this layer is composed are closely connected with the muscular layer. They are of a cylindrical shape, and apparently of two kinds, some of them



having a minute opening at the apex, others closed. The use of the perforated villi appears to be that of conveying the nutritive matter of the ingested food into the interior and nourishment of the animal.



*Hydra fusca*, containing the larva of an insect partially digested, magnified. (After Corda.)—*a*, superficial cells of the integument; *b*, muscular stratum, formed of minute granular coloured cells; *c*, villous tunic; *d*, anus; *e*, sucker.

There are four distinct species of *Hydra*. The commonest is *H. viridis*, common in still waters, and commonly adherent to the duckweed. It is of a leaf-green colour, and has six to ten tentacles, which are shorter than the body. *H. vulgaris* occurs in slowly running waters and weedy ponds. It is orange brown, or yellow, with seven to twelve tentacles, which are as long as the body or longer. *H. attenuata* is a rare pond species, with pale olive-green body, and pale tentacles, which are longer than the body. *H. fusca* is also rare, but particularly worth finding, as it has been so frequently the subject of experiment. It has a brown or greyish



body, the lower half suddenly attenuated, the tentacles several times longer than the body.

Owing to the voracity of these creatures, they cannot be kept for any length of time unless they can be fed with entomostraca.

## ENEMIES OF THE GARDEN.

BY WILLIAM GARDINER.



ALL who are engaged in the cultivation of ornamental plants, or in the production of crops of fruits and vegetables, have assuredly plenty of difficulties to contend with. At one time the cultivator has good cause for fearing that the crops of choice fruits out-of-doors will be cut off by the spring frosts; at another that the choicest of the summer vegetables will not attain perfection because of an excess of heat, or an insufficiency of moisture, and at all times a warfare has to be waged against the innumerable pests that prey upon plant life. These pests may with truth be designated the enemies of the garden, for there is not a plant, fruit, or vegetable cultivated that is not at some stage of its existence subject to the attack of one or more of them. They are alike perplexing to the amateur and professional gardener, and a few particulars of the best means of holding them in check will doubtless be of considerable service to many of your readers. I have not, perhaps, had more to do with the plant pests than most men having charge of large establishments; probably not so much as the majority, for I have made a point of resorting to remedial measures immediately the plants are attacked, for I have long been convinced that it is more easy to annihilate a few outposts than a strong army. But during the thirty odd years I have been actively engaged in garden work, I have had, it need hardly be said, abundant opportunities for becoming acquainted with all the pests that are capable of effecting much mischief, and also of arriving at correct conclusions in reference to the best means of ridding the garden of them.

To render my remarks as brief and intelligible as possible, I shall deal with each class in a separate paragraph, and mention those remedies only that long experience has proved to be thoroughly efficacious. It may be well to mention, that in the case of plants grown with the assistance of glass, a generous system of culture will constitute the most efficient preventive available, for plants in a thoroughly vigorous condition are not so soon attacked as those in a half-starved state, brought about by neglect or otherwise. Moreover, a healthy plant when either of the pests settles upon it, is very slow in succumbing to its attacks.

AMERICAN BLIGHT (*Eriosoma lanigera*) does much injury to apple trees when allowed to spread over them, and should be kept well under. One of the best means of clearing the trees is, early in March, to scrub the branches and shoots with strong brine, and then

paint them over with Gishurst Compound, prepared at the rate of eight ounces to the gallon of water. Spirits of turpentine or of tar applied to patches of the insect in the course of the summer will most effectually destroy them. The spirits should be applied with a small hard brush, and care taken to prevent its touching the leaves or young shoots, because it will kill the leaves and injure the young bark wherever it touches. With a little perseverance trees can be soon cleared. The Aphis Wash of the City Soap Company is also very effectual in eradicating this pest, if the trees are dressed with it in the course of the winter season.

APHIS.—The Aphis, of which there are some fifteen reputed species, are probably the most troublesome of all the insects that find their way to the garden. There is hardly a plant upon which they will not settle, and they multiply so fast that sometimes as many as twenty generations are produced in the course of the season, and according to scientific men, a single female may be the ancestor of five millions in the fifth generation. The most destructive are the green-fly, *Aphis rosæ*, which attacks roses and indoor plants generally; *A. pruni*, a light green insect, which does much mischief to the plum trees; *A. fabæ*, a black fly, which attacks the tops of broad beans; and *A. cerasi*, the black fly, which does so much mischief to cherry trees.

Fumigation is the most effectual remedy for all the aphids, when the plants are in frames or houses, but when out-of-doors some other means of destroying them must be adopted. To fumigate a house or pit effectually without injury to the plants, proceed as follows:—Take a flower-pot eight inches in diameter, which has previously had a hole made in the side, about an inch or so above the bottom. In the bottom of the pot put a few red-hot cinders, and to insure the material employed for fumigating purposes igniting readily, add a handful of brown paper, quite dry, and torn into small pieces. When the brown paper commences to burn freely, put a little dry tobacco, or tobacco paper, and then add in a gradual manner the properly prepared material. The tobacco paper, or rag, should be broken up into rather small pieces, and damped just sufficiently to prevent its burning too freely and bursting into a flame. As soon as the pot is filled and the material well ignited, it can be placed in the house, and with very little attention it will continue to give off dense clouds of smoke, until nearly the whole of the material is consumed. It is most essential the directions here given should be strictly followed; as, for example, if the tobacco paper is used too dry it will soon burst into a flame, and the plants will be seriously injured; and if the damp material is put upon the cinders, it will not burn satisfactorily unless it is continually blown, and to remain in a house partly filled with smoke is not pleasant. The fumigating pot must be watched from the outside, and the material occasionally stirred and be lightly sprinkled with water, for the most disastrous results will follow if the material burns through and remains without attention for any length of time. The structures should, as a rule, be filled so that it is impossible to see more than fifteen inches or so beyond the glass, and the fumigation

should be repeated about two days afterwards. The evening is the best time for fumigating, and still weather should be taken advantage of. Remove all plants in bloom previous to the fumigation, as the flowers soon fall after the exposure to the tobacco smoke. The foliage must be perfectly dry at the time, but a thorough syringing is desirable in the morning following. Fruit trees trained to open walls may, with the aid of a tarpauling, be fumigated; but, speaking in a general way, destroying aphids with smoke on trees and plants out-of-doors is a very troublesome business.

The best of the insecticides that can be employed in a dry state is tobacco powder, which can be obtained at all nurseries and seed houses. The foliage should be damp when the powder is applied, and with the aid of the puff sold for the purpose, or a medium-sized dredge, the under side of the leaves, as well as the surface, must be well dusted. Soft-leaved plants, such as calceolarias and cinerarias, must be well syringed in about twenty-four hours after the application of the powder.

A very effectual remedy in a liquid state is prepared by steeping shag tobacco in hot water at the rate of four ounces to the gallon. Quassia chips steeped in cold water, at the rate of two ounces to the gallon, is also most effectual in the destruction of aphids. In both cases a little size should be added to ensure the solution adhering to the insects. Immerse the plants, if practicable, bottom upwards in the mixture, or, if this cannot be done, thoroughly syringe them, but the first is the most economical method of using it. Shoots of rose and fruit trees should be dipped separately in a vessel containing the liquid.

**CELERY FLY.**—The larvæ of the Celery Fly (*Tephrites onopordinis*) in some seasons do much mischief to the celery crops, and as yet no effectual remedy has been discovered. When celery is infested with the larvæ the leaves become blistered and turn yellow, and as the grubs are underneath the blisters, they may be crushed between the finger and thumb. The grubs, when full-grown, descend into the earth, and remain in the chrysalis state until the following spring, when they give birth to the fly, which in due course deposits the eggs on the leaves. Therefore to prevent the attack of the pest the next year, leaves badly infested should be removed and burnt, to prevent the grubs attaining their full development.

**MEALY BUG** (*Coccus adonidum*) is one of the worst enemies with which the cultivator of stove plants has to wage a warfare. It multiplies so rapidly, and is so tenacious of life, that unless the utmost vigilance is exercised and remedial measures resorted to, it will soon spread over a house of plants, and do considerable injury. The mealy bug resembles small tufts of white cotton wool, and is exceedingly troublesome when it finds its way to grape vines, for if allowed to spread, and it is no easy matter to hold it in check, it will render the crop quite worthless. In the case of ornamental plants the only course that can be taken is to overhaul them, and wash away every cluster of the pest with the aid of a small hard-brush, water, and soft soap.

This must be done several times in the course of the year, in fact, as often as may be necessary. It is so difficult to eradicate mealy bug from pine-apples, that stocks infested should be burnt, and after the house has been thoroughly cleaned, painted, and whitewashed, a new beginning made with suckers obtained from a thoroughly clean stock. Grape vines infested with mealy bug must be frequently examined when they are in full growth, and the clusters of the pest be brushed away. At the winter pruning well wash every particle of the wood, and then dress them with a mixture prepared as follows:—To ten quarts of water add tobacco one-half pound, sulphur one pound, soft-soap one pound, and a table-spoonful of spirits of turpentine. To properly mix the several ingredients, boil, first of all, the tobacco for twenty minutes in about three quarts of water. Then with a little of this water, whilst quite hot, work the turpentine, sulphur, and soft-soap, into a paste, and when they have been well mixed, gradually pour upon the mixture the remainder of the boiling water, and finally add sufficient clear water to make ten quarts in all. The vines must be painted all over with this mixture, and sufficient care taken to avoid rubbing or in any way injuring the buds. Those who may be anxious to avoid the trouble of preparing a mixture as here advised can dress the vines with Gishurst Compound, prepared at the rate of eight ounces to the gallon of water, and sufficient clay added to make it of the consistency of paint. To amateurs with but little time on their hands, the mixture of Gishurst can be strongly recommended.

RED SPIDER (*Acarus tellarius*) is a very troublesome pest, for there is hardly a plant cultivated with the aid of glass that is not more or less subject to its attacks. A moist atmosphere is one of the best preventives, for so long as the atmosphere of the house is moderately moist, and the plants can be syringed once or twice a day, it makes very little headway, but immediately these conditions are changed it spreads with extreme rapidity. Syringing the plants thoroughly is one of the best remedies, and when grape vines become infested, the house should be shut up rather early in the afternoon, and the vines be thoroughly syringed. This can only be done before the grapes begin to colour. The fumes of sulphur are most destructive to red spider, and the hot-water pipes in vineries, cucumber houses, or melon pits, to which red spider finds its way, should be sprinkled with sulphur occasionally, or be painted with a mixture of sulphur and clay. For the first two or three days after the application of sulphur the pipes must not be made so hot that the hand cannot be laid upon them with comfort, or the fumes will probably be so strong that the tender leaves will be injured. Plants in pots may be cleared of red spider by sponging the leaves with water in which Gishurst Compound has been dissolved, at the rate of one and a half ounces to the gallon, and in about twelve hours afterwards syringing or washing them with perfectly clear water. The sponging should commence immediately the pest is detected.

SCALE.—Of these there are several kinds, and all very difficult to destroy, because of the impracticability of applying a remedy of sufficient strength to destroy them without injuring the plants.

The most troublesome are—the White Scale (*Coccus bromeliæ*), the Brown Scale (*C. testudo*), which mostly infests stove plants, and the Vine Scale (*C. vitis*), which soon spreads over the grape vines if unchecked, and does considerable mischief. The most effectual means by which plants of all kinds may be cleared of brown and white scale is to well wash the foliage and shoots with warm water and soft-soap; the latter to be put in a saucer, and the brush or sponge to be dipped into it occasionally, as the work of washing proceeds. A lump of Gishurst Compound may be employed in a similar manner to the soft-soap, or the plants may be washed with a solution of Gishurst, or other of the insecticides prepared according to the directions accompanying them. Merely dipping the plants in a solution of either of the insecticides is of very little use, for the simple reason that they cannot be employed of a sufficient strength to be effectual. To thoroughly wash a house full of plants is very tedious, but if the scale is allowed to obtain a firm foot-hold it must be done, or the plants will become worthless.

Grape vines that become infested with scale must, after their winter pruning, have all the loose bark removed, and the canes and spurs be carefully examined, and every insect discernible removed. After this has been done, thoroughly scrub the bark, without injuring the eyes, with hot water and soft-soap, the brush to be simply dipped into the latter occasionally; and then apply a dressing prepared as follows:—To two gallons of water add, when quite hot, half a pound of tobacco, quarter of a pound of soft-soap, and half a pound of sulphur, and allow it to stand for a day or so. Before using add a little lime or clay, to give it the consistency of ordinary paint, and just sufficient soot to make the mixture of a dull brown colour. Peach and other fruit trees infested with the brown scale should have much the same attention as the grape vines, but great care is necessary to prevent injury to the buds. The branches of vines and fruit trees infested with scale must be examined occasionally in the course of the summer, and the pests be dislodged with the aid of a piece of thin pointed stick.

THRIPS (*Thrips adonidum*) is like the red spider, a very troublesome pest, as it increases very quickly and is difficult to kill. Green-house azaleas are especially liable to its attacks, and if it is allowed to go unchecked for any length of time the plants will be very seriously injured. Grape vines, melons, and cucumbers are also frequently infested, and the insects usually find their way to plants suffering from an insufficiency of moisture at the roots, or that have been kept in a close, dry atmosphere. The best preventives are a proper supply of water to the roots, abundant ventilation, and a moderate degree of atmospheric humidity. Fumigating plants infested, with tobacco or tobacco paper, in much the same manner as advised for the aphids, is an exceedingly good remedy. For destroying thrips upon azaleas, Mr. John Frazer, of the Lea Bridge Nurseries, states that in his establishment the following mixture has been found the best remedy:—

Take five or six pounds of soft-soap and dissolve it in about twelve gallons of rain water, then add a gallon of strong tobacco

liquor; dip the plants, and before they become dry, wash them in a tub of clean soft water, and not one thrip will be left alive. The same process should be gone through again in about a fortnight's time, so that the young (which appear to come from eggs attached to the back of the leaves) may be killed as soon as hatched. A strong fumigating with tobacco is a good check, but nothing answers so well as dipping the plants in the above mixture. It is not necessary to adhere strictly to the quantities of soft-soap, etc., stated, as a much stronger mixture does not hurt the plants. Immersing the plants entirely, so that every part is wetted, is best; but if they are too large to dip, the syringe, with a fine rose, can be used.

It is very important, however, to watch for its appearance, and as soon as the presence of the insects is detected, to sponge the leaves with an infusion of tobacco, or a liquid prepared as here advised, but of course in smaller quantities. The insects are small, rather long and thin, and blackish in colour, and until the colonies become large they are not readily seen.

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### NEW FERNS.



WITHIN the last two or three years several most valuable additions have been made to the list of exotic ferns, and a few words in reference to them may probably at the present moment prove interesting to a large number of readers. British ferns have not received much attention of late, and although a considerable number of new varieties have been exhibited, and a proportion had certificates of the first class conferred upon them, they have not made their way to trade collections. From this it may be inferred that they are a shade less popular than was the case some eight or ten years ago, or that the cultivation of established favourites is found sufficient to occupy the attention of those who take special interest in hardy ferns. But the demand for the exotic kinds does not appear to have diminished, for the new species are eagerly sought after, and those found to possess a fair degree of merit are soon distributed throughout the country. It is not necessary to refer to all the ferns that have been introduced within, say, the last three years or so, but there are some quite indispensable to the smallest collection, and to those special attention will be directed.

*Adiantum gracillimum* must have the highest place upon the list, for it is not only one of the finest of new introductions, but it is also one of the very best of the genus to which it belongs. It is in some respects more elegant than *Adiantum cuneatum*, which is deservedly a favourite of all who take the slightest interest in ferns. It is similar in habit to it, and the fronds are of much the same size, but the pinnae are much smaller, and the fronds are consequently lighter in appearance. For bouquets it is of the utmost value, for the fronds may be so arranged that they form a tracery of the lightest green over the flowers. The fronds remain in good condition for a considerable period after their removal from the plants, which, it should be said, thrive in a cool house.

*Adiantum amabile* is a very handsome species, with elegant light green fronds, which average fifteen inches in length by ten inches in width. Although less valuable than the preceding form, it is sufficiently beautiful to justify its admission into the choicest collection of stove ferns.

*Adiantum Hendersoni* is an exceedingly handsome species, with medium sized fronds of a rich bronzy crimson colour when young, changing, as they acquire age, to deep green.

*Adiantum peruvianum* is alike remarkable for its noble aspect and graceful habit. The fronds attain a length ranging from two to three feet, and are gracefully pendant. It is a fine fern for large houses.

*Alsophila australis Williamsi* has been aptly designated the "Weeping Tree Fern," for the broad, deep green fronds are gracefully pendant, and form umbrella-like heads. The fronds assume the pendant state whilst quite young, and as small plants may be had for a guinea or so, it is within the reach of most amateurs. This, it may be proper to add, is a small sum for ferns of arborescent habit.

*Davallia Mooreana*, like *Adiantum gracillimum*, is an extremely valuable introduction, and elegant as are most of the species, comprising the genus to which it belongs, it must be considered the most beautiful. The fronds attain a length ranging from one to three feet, and a width ranging from eight inches to two feet, are triangular and pointed, of most graceful arching habit, and elegantly cut into a multitude of small segments. Small plants are extremely valuable for the dinner table, and large specimens are very telling in competitive groups, whilst in the fernery, plants of all sizes are very attractive. It is of very rapid growth, and cheap.

*Davallia Tyermanni* is as distinct from the preceding species as it well can be; for instead of having tall, spreading fronds, it is very dwarf and compact in growth. It is a pretty little species, well deserving of cultivation.

*Dictyogramma japonica variegata*, a remarkably handsome greenhouse fern of medium growth, with distinctly variegated fronds. The latter range from twelve to eighteen inches in length, are furnished with one or two pair of linear-lanceolate pinnæ and a somewhat longer terminal one. As the plants acquire age, the pinnæ divide, and the fronds become bipinnate. Along each side of the midrib are yellowish green blotches, which gives the surface of the frond a variegation very distinct.

*Goniophlebium glaucophyllum* is a very handsome stove fern, well adapted for baskets. The fronds are oblong lanceolate, gracefully pendant, and of a rich glaucous green hue. It is a decided acquisition amongst really first-class basket ferns, of which the number is not over large.

*Gymnogramma decomposita* belongs to the class popularly known as "Gold Ferns," and is remarkable for its elegant habit and free growth. The fronds are triangular, much divided, and the underside is covered with a pale yellow powder. This species will be found of immense value to cultivators who are unable to produce



good specimens of *Gymnogramma chrysophylla* and *G. Laucheana*.

*Gleichenia Mendeli* belongs to a class of ferns remarkable for their exquisite beauty, but so difficult to cultivate successfully that they are not often seen in the collections of amateurs. This species is of compact habit and free growth, and succeeds admirably in a cool house.

*Pleocnema Leuzeana* belongs to the section comprising those of arborescent habit, although it appears to attain a considerable age before the formation of a stem commences. The fronds attain a length of two or three feet, are very elegantly divided, and of a bright glossy green, and under ordinary good cultivation it makes a grand specimen, but it is only adapted for spacious structures.

*Polystichum lepidocaulon* resembles the *Cyrtomiums* in aspect, although perfectly distinct from them. The fronds are long and narrow, and either acuminate at the apex, or prolonged and proliferous. It is well adapted for the cool fernery, and will probably prove quite hardy. As a basket fern, for cool structures, it has few equals.

*Polystichum Diana*, recently introduced from St. Helena, is a noble greenhouse species, attaining a height of from four to five feet. The fronds are elegantly bipinnate and membranous in texture. Like the *Pleocnema* already referred to, it is a grand fern for large houses, but it possesses an advantage over that species in having a constitution sufficiently hardy to admit of its successful cultivation in a cool house.

S. H.

### THE CHURCH SPIRE JUNIPER.



SOME years ago I obtained from Messrs. Rollison and Sons, the eminent nurserymen, of Tooting, their beautiful variety of the Crimean Juniper, which bears the name of *Juniperus excelsa stricta*, and have derived so much pleasure from the trees that I wish to recommend this variety as the very perfection of a lawn conifer. Its growth is remarkably compact, the colour of the delicate leafage a silvery glaucous green, and the natural form of the plant is that of a close tapering spire, of the pointed Gothic order. We do not, of course, wish that all our lawn trees should grow so stiff and precise as this does, and a flowing outline with feathery adornments, may be as acceptable in a lawn-tree as the most prim and precise contour of a tree that appears as if designed to teach a lesson in geometry. Here, however, is the most distinctly geometrical of all the choicer kinds of trees, and for the formal lines of the promenade it seems peculiarly fitted. It grows slowly, but is perfectly hardy. We have had it on wet clay, where it was often swamped for weeks together, and in positions exposed to the keen east wind as it comes with killing force from the marshes of the river Lea, and have not yet seen so much as a spray killed by wet or frost. A hardier tree there is not, and for a vegetable spire, we know not where to equal it.

S. H.



## THE GARDEN GUIDE FOR JUNE.

I WALKED in a field of fresh clover this morn,  
 Where lambs play'd so merrily under the trees,  
 Or rubbed their soft coats on a naked old thorn,  
 Or nibbled the clover, or rested at ease.  
 And under the hedge ran a clear water brook,  
 To drink from, when thirsty, or weary with play,  
 And so gay did the daisies and buttercups look,  
 That I thought little lambs must be happy all day.  
 And when I remember the beautiful psalm  
 That tells about Christ and his pastures so green ;  
 I know He is willing to make me his lamb,  
 And happier far than the lambs I have seen.  
 If I drink of the waters, so peaceful and still,  
 That flow in his field, I for ever shall live ;  
 If I love Him, and seek his commands to fulfil,  
 A place in his sheep-fold to me He will give.  
 The lambs are at peace in the fields when they play,  
 The long summer's day in contentment they spend ;  
 But happier I, if in God's holy way  
 I try to walk always with Christ for my friend.

MRS. DUNCAN.

## FLOWER GARDEN.

THE herbaceous border will now be especially attractive, for a considerable proportion of the very finest hardy flowers bloom during the month. For example, there are *Lilium aurantiacum*, *L. candidum*, *Enothera Fraseri*, *E. grandiflora*, *Delphinium Barlowi*, *D. formosum*, *Dianthus plumarius*, and *Sweet Williams*. Stools of such things as produce a multiplicity of flower-spikes should be examined, and the weakest of the flowering-shoots removed. Stake those left, and also flowering-spikes of Delphiniums, Lilies, etc., to prevent the wind snapping them off. The summer bedders ought to be in their proper places by this time, and the beds and borders be made trim and neat as speedily as possible. Pansies that have done flowering should be cut back, and cuttings made of the young side-shoots as they push. Plants of a trailing habit, like the Petunia and Verbena, should have the young shoots pegged out regularly before they are crowded. The superfluous shoots should be removed from briers intended for budding, and those remaining ones shortened back, if growing too vigorously. Sow seed of herbaceous perennials for flowering next year. Many hardy plants will strike freely now on a shady border, or under hand-lights, if the young side-shoots are slipped off with a heel, and inserted firmly in the soil. Dahlias and Hollyhocks must have stakes put to them at once.

## KITCHEN GARDEN.

Endive and lettuce ought to be sown where they are to remain at this season. Plant out cabbage and cauliflower for the autumn, and Brussels sprouts, borecole, brocoli, and savoy for the winter. Choose a dull, moist day, if possible, for all planting operations. Plant out the early crop of celery, and shade with a few branches of evergreen until the plants are established, and keep well supplied with water. Keep the hoe going amongst all growing crops, to keep the surface loose, and the weeds in subjection. A second crop of scarlet runners ought to be sown the second week for succession ; and a few rows of dwarf beans both the first and last week.

## FRUIT GARDEN.

Let the work of thinning the young shoots of wall trees progress steadily, and leave no more wood than is really wanted for bearing next year, and filling up vacancies that are likely to occur. Remove all runners from the strawberry beds, unless they are required for layering ; by doing it now, a lot of trouble will be saved hereafter, as it can be done in less than half the time. A few doses of liquid manure will help to swell off the late crops.

## GREENHOUSE AND CONSERVATORY.

Hard-wooded plants ought to be removed into the open air some time this month, according to the state of the young growth. The utmost caution is necessary, just now, to see that the plants have sufficient water at the roots, but without having too much. Pelargoniums are now fast going out of flower ; they should be removed

to the open air to mature the young wood, and then be cut back to two or three eyes each. The early-flowering varieties that were cut back early last month will be ready for potting soon. The plants should be shaken out of the old stuff, the roots pruned, and then be repotted in smaller-sized pots. After they are repotted, stand them upon a layer of coal-ashes in the full sun for the present. A slight sprinkle overhead in the evening will materially help the production of new roots. Fuchsias may have liberal supplies of manure-water to help them on as the pots get full of roots.

#### VINERY.

Vines in all stages to have abundant ventilation early in the day. The borders must be kept well supplied with water, excepting where the grapes are just colouring.

#### STOVES.

The general stock must have a good syringing overhead at least once a day in bright weather, and not be allowed to suffer for the want of water at the roots. A few cans of water should be poured on the paths several times during the day. Any of the stove-plants that are to go to the conservatory when in bloom should be removed to the coolest end, or be placed in an intermediate house a week previous. Stove-plants should have the warmest position the conservatory affords, and be guarded from draughts. Achimenes and Gloxinias for late flowering should now have their final shift, and winter-flowering plants be potted on as occasion requires. Shift Stanhopeas into larger baskets, or top-dress with fresh sphagnum as they go out of flower. Orchids growing on blocks will now require a daily dipping in tepid water.

### HORTICULTURAL AFFAIRS.



ROYAL HORTICULTURAL SOCIETY will hold its great summer exhibition on the 7th and 8th instant, and as the schedule is comprehensive, and the prizes fairly liberal, an excellent display of plants, fruits, and flowers may be anticipated. At the two meetings of the Floral and Fruit Committees held during May, a few novelties were exhibited, but they were not sufficiently remarkable to render it needful to refer to them in detail.

THE INTERNATIONAL HORTICULTURAL EXHIBITION at Brussels was a splendid success, although the weather was not so good as could have been desired. It was the hundredth anniversary of the Société Royale de Flores de Bruxelles, and had the advantage of royal patronage, and the hearty co-operation of horticulturists of many nations, those of Belgium, France, Holland, and England being the most conspicuous both by the number and merit of their contributions. Amongst the officers were the Comte de Ribaucourt, president; M. J. Linden, vice-president; Professor Morren, treasurer; and a strong body of horticulturists in the working committee. The show was held in the hall of the triennial Exposition of Fine Arts, in the Place de Petit Sablon, a large wooden structure with ridge and furrow roof, well lighted, and fairly, if not absolutely, suitable for the purpose. The greater part of the subjects for exhibition were grouped on the wooden floor. The centre avenue was richly filled with trophy groups of palms and other fine-foliaged plants, a great mass of pot roses from Messrs. Veitch, a set of dracænas from Mr. Wills, a charming circular mass of hyacinths in shallow pans, each pan holding ten bulbs, and presenting ten to twelve fine spikes; a large side-block of novelties—mostly flowering plants—gay with colour, from Mr. B. S. Williams; corner groups of hardy trees and shrubs, several blazing masses of azaleas that in a certain sense might be described as too good, for they were all bloom without a bit of green to relieve the colour. The contributions were, in the first instance, to a great extent placed where they were to remain, but with some subjects this was impossible, and they were staged for the judging merely. That important business over, a general revision took place, and the great groups were enriched by additions, and various minor alterations were made to ensure a pictorial effect and perfect order throughout. All who were officially engaged in the carrying out of the arrangements were on the Friday previous to the opening of the exhibition entertained at a splendid banquet by the King and the Queen of the Belgians.

ALEXANDRA PALACE, MUSWELL HILL.—The great summer exhibition held at the Alexandra Palace on May 5 and 6, was successful as a whole, but as the plants were grouped in the corridors on each side of the Central Hall, the general effect

was not so good as would have been the case had they been arranged in the body of the hall. Roses and azaleas were shown in large numbers, and in excellent condition. The weather was remarkably fine on both days of the show, and the number of visitors was exceedingly large, especially on the second day, when the horticultural exhibition was supplemented by a grand concert and other attractions. One of the most important contributions to the meeting was the magnificent collection of specimen roses exhibited by Mr. J. W. Moorman, whose system of culture was recently explained in the FLORAL WORLD.

ROYAL AQUARIUM, WESTMINSTER, MAY 16 AND 17.—This exhibition was remarkable for the magnificent display of specimen roses, which have certainly never been shown in such excellent condition. In the first and second prize collections of twelve, contributed by Mr. Charles Turner and Messrs. Paul and Sons respectively, the specimens ranged from four to six feet in height, and from ten to twenty feet in circumference, and were solid with flowers of superb quality.

THE NATIONAL AURICULA SOCIETY held its annual exhibition at Manchester this year, but owing to the lateness of the season it was not quite up to the average. Nevertheless, a large number of splendid flowers were exhibited, and for the information of those of our readers interested in Auriculas, we give herewith the names of the winning varieties in the two principal classes. For six distinct varieties, the Rev. F. D. Horner, Kirby Malzeard, Ripon, first, with Booth's Freedom, Heap's Smiling Beauty, Syke's Complete, Cheetham's Lancashire Hero, Traill's Anna, and Hay's Topsy. Mr. Wilson, second, with Traill's Prince of Greens, Headly's George Lightbody, Heap's Smiling Beauty, Leigh's Colonel Taylor, Pohlman's Garibaldi, Ashworth's Regular. Mr. Woodward, third, with Read's Czar, Syke's Complete, Martin's Mrs. Sturrock, Gaines's Lady Richardson, and Heap's Smiling Beauty. For four distinct kinds, Mr. Simmonite, first, for fine examples of Traill's Beauty, Lightbody's Robert Traill, Martin's Mrs. Sturrock, and Admiral Napier. Mr. H. Wilson, second, with Headly's George Lightbody, Lightbody's Meteor Flag, and Litton's Imperator.

MESSRS. JACKMAN AND SON'S exhibition of Clematis in the gardens of the Royal Botanic Society, Regent's Park, during the past month, proved remarkably successful and afforded ample evidence of the value of these plants for exhibition and decorative purposes when well grown in pots. All the varieties of which the exhibition consisted are more or less good, but the following were made note of, as being the best in their several lines of colour, viz., Fair Rosamond, a beautiful blush-coloured flower with reddish bar up the centre of each sepal; John Murray, purplish mauve, rather late and very fine; Stella, deep mauve with reddish bar up the centre of each sepal; The Queen, delicate lavender, very large and very fine; Vesta, blush-white, distinct and beautiful; Sir Garnet Wolseley, reddish mauve, very distinct in colour and of superb quality; Alba Magna, a magnificent variety, the flowers pure white, and of immense size and superb quality; Earl of Derby, deep lavender shaded lilac; and Lord Mayo, lilac shaded with rose.

PINE-APPLE NURSERY, EDGWARE ROAD, one of the most important of the metropolitan establishments has been purchased by Messrs. E. G. Henderson and Son, who will carry on the business conjointly with that of their St. John's Wood establishment.

THE BIRMINGHAM POTATO SHOW, to be held in December next, promises to be remarkable for its completeness and extent. The managers of the exhibition have decided to provide classes, in addition to those for collections, for single dishes of Ashleafs, Lapstones, Regents, and other distinct types. The prizes are liberal throughout, and the first prize offered for a collection of twelve kinds is supplemented by a silver cup of the value of ten guineas.

M. VAN HOUTTE, one of the most famous of European nurserymen, died at his residence at Ghent on May 9th, in his sixty-sixth year. He was editor [and proprietor of the *Flore des Serres*, one of the best of the continental periodicals, which has now reached its twenty-second volume, and is a capital monument of his industry. It contains 2,261 coloured illustrations, and 2,300 woodcuts, and nearly 5,000 papers on horticultural matters.

MR. W. B. HEMSLEY has been appointed lecturer on botany at St. Mary's Hospital, in place of Dr. Trimen, who has resigned.

M. VOGEL of Munich finds that seeds germinate more quickly if moistened with camphorated water than with water simply.

## JUNE EXHIBITIONS.

- 1.—ROYAL BOTANIC SOCIETY.—*Conservatory Fête and Exhibition of Flower Beds.*
- 2 TO 9.—MANCHESTER BOTANICAL SOCIETY.—*National Horticultural Exhibition at Old Trafford.*
- 5.—BATH AND WEST OF ENGLAND AGRICULTURAL ASSOCIATION.—*Opening Day of Exhibition at Hereford.*
- 5.—SOUTHAMPTON HORTICULTURAL SOCIETY.—*First Summer Exhibition.*
- 7 AND 8.—ROYAL HORTICULTURAL SOCIETY.—*Great Summer Exhibition. First Day, Fruit and Floral Committees, 11 a.m.; Scientific Committee, 1 p.m.; General Meeting, 3 p.m.*
- 13.—SOUTH ESSEX HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 14 TO 16.—YORK.—*Grand Floral Fête.*
- 16.—SCOTTISH PANSY SOCIETY.—*Annual Exhibition at Edinburgh.*
- 16 AND 17.—CRYSTAL PALACE.—*Great Rose Show.*
- 19.—COVENTRY HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 20.—ROYAL OXFORDSHIRE HORTICULTURAL SOCIETY.—*Second Summer Exhibition.*
- 21 AND 22.—LEE AND BLACKHEATH HORTICULTURAL SOCIETY.—*Annual Summer Exhibition.*
- 21.—ROYAL HORTICULTURAL SOCIETY.—*Fruit and Floral Committees, 11 a.m.; Scientific Committee, 1 p.m.; General Meeting, 3 p.m.*
- 21.—ROYAL BOTANIC SOCIETY.—*Second Summer Exhibition.*
- 21.—MAIDSTONE ROSE CLUB.—*Annual Exhibition.*
- 21.—FAREHAM AND SOUTH HAMPSHIRE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 21 AND 22.—SPALDING HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 23.—EXETER HORTICULTURAL SOCIETY.—*Exhibition of Roses.*
- 24.—REIGATE ROSE CLUB.—*Exhibition of Roses.*
- 28.—BURTON-ON-TRENT HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 28 TO 30.—LEEDS HORTICULTURAL SOCIETY.—*Annual Summer Exhibition.*
- 29.—FROME ROSE CLUB.—*Annual Exhibition of Roses.*
- 29.—ROYAL HORTICULTURAL SOCIETY OF IRELAND.—*Second Summer Exhibition.*
- 29.—RICHMOND HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 30.—GARDENERS' ROYAL BENEVOLENT INSTITUTION.—*The Thirty-third Annual Festival.*

THE IRIS AND THE BLUE VIOLET yield a colouring matter of a fine blue colour, called Phyllocyanin. The exquisite sensibility of this colour, which is far greater than that of litmus, recommends it strongly to chemists as a means for detecting alkalis. Guido Pellagri has a paper on the subject in the *Gazetta Chimica Italiana*.

TAKING IMPRESSIONS OF PLANTS.—M. Bertot of the Paris Academy has just made known a method of taking impressions of plants, requiring only a large sheet of paper, some olive or other oil, blacklead, ashes, resin, or colophony. The paper is first lightly oiled on one side, then folded in four so that the oil may filter through the pores, and the plant may not come in direct contact with the liquid. The plant is placed between the leaves of the second folding, and in this position pressed (through other paper) all over with the hand, so as to make a small quantity of oil adhere to its surface. Then it is taken out and placed carefully on white paper; another sheet is placed above, since two impressions can be taken, and the plant is pressed as before. On now removing it an invisible image remains on the paper. You sprinkle over this a quantity of blacklead or ashes, &c., and distribute it in all directions, as in applying sand to writing: the image then appears in all its parts. With an assortment of colours the natural colours of plants may be reproduced. To obtain fixity resin is added to the blacklead previously in equal quantities; the impression is fixed when it is exposed to a heat sufficient to melt the resin.

## TO CORRESPONDENTS.

**TO TRAP WOODLICE.**—*A Very Old Subscriber.*—One of the best traps for woodlice is a flower-pot loosely filled with dry hay or moss. Five and six inch pots are the most suitable, because of the greater convenience of handling. They should be clean, and after they have been lightly filled with hay or moss, it matters not which, take them to where the woodlice abound, and place in convenient positions. The pots may be turned upside down, with a small piece of crock or wood placed under one side to raise it sufficiently for the insects to pass readily underneath, or they may be laid upon their sides. It is of little consequence whether the pots are inverted or laid upon their sides, for the woodlice will find their way to them all the same; but when the pots lay upon their side there is a risk of the material with which they are filled being wetted when the plants are syringed and watered. The woodlice will during the daytime congregate in the material, and they may then be destroyed in a very simple manner. In proceeding to destroy them, have a pail or other vessel containing hot water, and then take the pot in one hand, and whilst holding it over the hot water withdraw the material with the other hand, and shake the woodlice into the water, and so make an end of them. The hay or moss can then be replaced and the pots be returned to their old position, or placed in a new one, as may seem best. The examination of the pots must be repeated every day until the structure is pretty well cleared of the pests. It is important to fill the pots with material in a perfectly dry state. It is sometimes possible to destroy large numbers by pouring boiling water into crevices in which they have taken up their abode; but of course boiling water must not be employed where there is any chance of its reaching the roots of trees or plants of any kind. A considerable amount of perseverance is necessary when a garden is badly infested.

*Mr. Evans* is informed that the Waltonian case is not manufactured now, and that the propagating case made by Messrs. Barr and Sugden, of 12, King Street, Covent Garden, has taken its place.

**RAISING PETUNIAS, ETC., FROM SEEDS.**—*W. H. T.*—Petunias, as a rule, seed very freely, especially when in pots, and all that is necessary to obtain a supply of seed from them is to examine the plants occasionally and gather the seed-pods that are at the time just ready to burst. Some care is needful in gathering the seeds, because if they are gathered before they attain maturity they will not germinate satisfactorily, and on the other hand, if left too long, the pods will burst and the seed will be lost. Verbenas do not seed so freely as the petunias, and it is necessary to gather the pods separately as fast as the seed commences to ripen, for if the gathering is deferred until the upper flowers are faded, the seeds in the lower pods will drop out. Fuchsias produce their seed in large berry-like pods, which must be allowed to remain upon the plants until they have become quite ripe, as indicated by their changing to a blackish colour and becoming quite soft. They may be left until they drop from the plant. When the pods are gathered, crush them between the finger and the thumb, and with the aid of a little clean water wash the pulp from the seeds and lay them upon a sheet of paper to dry before storing. The seeds of geraniums are very distinct from those of the other flowers, for when ripe they are furnished with a feathery appendage about an inch in length. It is not difficult to determine when they are fit for gathering, for as they ripen they become partly detached, and commence to curl upwards. When arriving at this stage the seeds should be gathered, because if allowed to remain long afterwards there is a great risk of their being blown away and lost. As you are desirous of obtaining as large a supply of seed as possible, the plants should remain in pots, and have a light position in an airy greenhouse. In a position of this kind all the plants here mentioned, with the exception of the fuchsia, will usually seed freely without the flowers being fertilized by hand. But the best results usually follow artificial fertilization, and in your case we would recommend its adoption. This consists simply in the application of the pollen from the same or other flowers to the pistil. In the flowers of the fuchsia and pelargoniums, for example, you will observe a cluster of slender thread-like bodies, one of which is stouter and of greater length than the others. The longest of these is the pistil, and the others are the stamens. The latter bear at the terminal points small clusters of powdery particles, technically designated pollen, and this, with the aid of a small camel's-hair pencil, must be applied to the end of

the pistil, technically known as the stigma, as soon as it is fully developed. The pollen should be obtained from the flowers of a variety distinct from that fertilized. Fuchsias should invariably be fertilized in the manner here indicated.

*C. H.*—The comparatively hardy *Pancratium illyricum* may be grown most successfully in a compost consisting of sandy loam, peat, and well rotted cow manure, in about equal parts. It requires liberal supplies of water at the roots during the growing season, and to be kept rather dry when at rest. It usually blooms in May. Several plants of a quite distinct character are popularly known as "the Air plant," and therefore, before we can advise on the propagation of the plant you have, we must first of all know what it really is.

THE COLOURING OF GRAPES.—*J. S. R.*—Grapes are, as a rule, of the finest flavour when well coloured, and as the intensity of colour, according to respective kinds, is a good index of the grape-grower's ability, every effort should be made to finish the crops in the best possible manner. That is to say, the Black Hamburg, Lady Downes, and other black kinds should come to table of a deep blue-black, and the berries be furnished with a dense bloom; and the Muscat of Alexandria, Buckland Sweetwater, and other so-called white varieties, of a fine amber colour. In the colouring of grapes the most important condition is to secure a proper circulation of air. In the summer this is no difficult matter, as the condition of the external atmosphere allows of its free admission, for the most part, both night and day; but even then air must not be admitted indiscriminately should rain or windy weather occur; for to colour grapes satisfactorily, and at the same time secure good flavour, there must be an increased temperature, with more air than is required for mere growth. Therefore, in giving air, we must be guided by the condition of the outward elements, and not give it such free access as would keep down the internal temperature injuriously. Supposing the maximum temperature to be 90°, a very safe standard, the minimum must not be lower than 70°. The colouring of grapes in the early spring months is attended with more anxiety and difficulty, for the simple reason that air cannot be admitted so freely; but as air is essential it must be admitted at the expense of keeping up a greater degree of heat from the heating medium, or, to be more plain, the temperature of the house must be raised five to ten degrees higher to allow of air being given without lowering it below the proper standard. Heat and air are both essential elements for the securing of colour and flavour in grapes, and to regulate temperature and ventilation are, therefore, two of the most important duties of the cultivator. In both early and late houses there will inevitably occur many days when, with judicious management, a current of fresh air may be carried through, and unless this is done there cannot be any certainty that the crop will finish off satisfactorily. The next point of consideration must be the humidity of the internal atmosphere. This must be considerably reduced as soon as the berries change colour; but atmospheric moisture must not be withheld altogether, for two reasons—first, because a sudden cessation of moisture in the atmosphere of the house might produce incalculable harm, by arresting, at a very critical stage, some of the processes of development of the vine. Being surrounded, as vines up to that point usually are, with a great amount of atmospheric moisture, they are not in a condition to endure a sudden check with impunity, and besides this, a very dry atmosphere is likely to offer a fair field for the red spider, which is a terrific enemy of the vine. The supply of atmospheric moisture must therefore be reduced gradually. In dull weather withhold water altogether; in very hot weather water may be sprinkled about the floor from nine to twelve daily. We have lastly to consider the condition of the roots. These must not be saturated with moisture after the first signs of colour are shown. If they have up to that point been liberally attended to with respect to water, they will be able to take care of themselves; and in badly-drained borders of late houses it is a good plan to have temporary coverings close at hand, so that they may be put on to carry off the heavy rains which sometimes occur at the season when the grapes are ripening.





LILIUM CRANFORDIUM.



## NOTES ON LILIES.

*(With Coloured Illustration of Lilium chalcedonicum.)*

THE allusion to the "lilies of the field," in that greatest and sweetest of sermons, delivered by our Lord on the Mount, has given rise to much interesting speculation. Somewhere in the FLORAL WORLD I have replied to a correspondent on the subject, to the effect that if the Master had in his mind any particular lily, it might be the one registered in the books, and known in gardens, as *Lilium chalcedonicum*, but that a broad reading of a broad text would enlarge the allusion to flowers in general, so that we might say, "Consider the flowers of the field, which wear the clothing of God, and therefore need not to toil or spin." I have searched through the eighteen volumes of the work, and failed to find the paragraph, and shall be thankful to any reader who can now direct me to its whereabouts. For the present it may suffice, however, to say that the Syrian lily answers the requirements of the sacred text, not only as to the passage just referred to, but also as to allusions to lilies in Canticles, Hosea, and Ecclesiasticus. Its colour is like that of the kingly robe, it is indeed arrayed like Solomon; it is short-lived as the grass, which "to-day is, and to-morrow is cast into the oven;" and it grows in profusion in the district of Galilee, where it flowers in April and May. Then, no doubt, a speaker addressing a multitude in the open air might point to the purple thickets for an argument, and with profound meaning declare that "Solomon in all his glory was not arrayed like one of these."

Lilies have obtained a considerable amount of attention of late years, and very much has been written about them in this and other horticultural publications. Their beauty and fragrance will insure their popularity so long as the human mind retains its sense of beauty, and thus the difficulties that attend their cultivation will not greatly interfere with their diffusion in gardens. That there are difficulties none know so well as those who have purchased experience by years of devotion to these charming flowers. The present summer will be emphatically a lily season, for the lilies are flowering with unusual strength and uniformity, and the fact reminds us that several successive summers of late years have been characterized by a poor bloom of lilies. The production of a fine bloom appears to depend in great measure on the autumnal rainfall, for all lilies make new roots soon after flowering, and it appears that they require extra moisture when the new underground growth begins. The summer of 1875 was characterized by two distinct periods of unwonted wet, and the second of these corresponded with the season of new growth of most of the species of lilies grown in our gardens; and of course with those grown in Holland, whence we obtain large supplies of new bulbs every year. In any case, however, a copious summer rain is good for lilies, and it follows that one of the important points in the cultivation is to give water liberally and

constantly; at the same time, it should be understood that lilies will not thrive in a water-logged or exceedingly heavy soil.

This brings us to consider the proper soil for lilies, and it may be remarked, to begin with, that the same soil does not exactly suit all alike. For the lovely *Lancifolium*, or *Speciosum* section, turfy peat is certainly the best staple, and our market growers who flower these lilies superbly in small pots invariably use peat, or a mixture in which peat predominates. All the smaller and more delicate species require a peaty or loamy soil, containing a rather large proportion of sand, and they are partial also, as most other lilies are, to good leaf-mould. As for such robust kinds as *Candidum*, *Auratum*, *Chalcedonicum*, *Bulbiferum*, *Umbellatum*, *Thunbergianum*, and *Tigrinum*, a deep sandy loam, enriched with thoroughly rotten manure, suits them perfectly. As they love a cool rooting-ground, and are somewhat gross feeders, it is good practice to mulch the ground in summer with rotten manure; but as this may be objectionable in many cases because tending to spoil the appearance of a bed of lilies, watering with weak liquid manure may be substituted, and in any case it should be remembered that every kind of lily requires abundance of moisture.

A frequent cause of failure in the cultivation of lilies is the removal of the bulbs at the wrong season. So long as they are doing well they should be left undisturbed; but after they have stood on the same spot some years, it may be advisable to lift, and part, and plant again on ground prepared for them by deep digging and manuring. The time to purchase is the autumn, and they should be planted or potted as soon as possible, because they begin at that season to make new roots, and thus prepare themselves for the next year's flowering. The most accommodating in this respect are the varieties of the *Lancifolium* section, which may be kept dry in cocoanut fibre for a considerable length of time, and usually flower well, even if planted or potted late in the spring. But even with these, it is not well to put nature out of her course, and the earlier they are planted in the autumn the finer will the growth be, *cæteris paribus*, the next season. Our common white lily, *L. candidum*, should be transplanted as soon after flowering as possible, for it begins to grow again almost immediately, and if disturbed too late, will not flower at all the next season. Many of the deaths of *Auratum*s that occur are the result of removal at the wrong season, although this, the noblest of its race, is apt to die off through exhaustion after flowering, even with the best of treatment.

All the lilies known in gardens are hardy in the best climates of Britain, but are not hardy in the general acceptance of the word. On our cold clay, the noble *Giganteum* and the lovely *Longiflorum* can only be grown as pot-plants, for although they may escape the severity of the winter, they begin to grow too soon in the spring, and are nipped by the east winds, and thus almost every year have such a struggle for life that flowering is rendered impossible. But in the qualified sense of the word, all lilies are hardy, and those best known in gardens owe their general diffusion to their hardiness and their capability of thriving in almost any kind of soil. At Ware's

nursery, Tottenham, may be seen at the present time a magnificent collection of lilies, growing in a good yellow loam, prepared for them by deep digging and liberal manuring. A lover of lilies should see this display.

Lilies force well; but they are not all worth forcing. Those that pay best for the care required to produce an extra early bloom, are *Auratum*, *Longiflorum*, and *Candidum*; the last two being peculiarly well adapted to supply flowers for Easter decorations. It would be quite as easy to secure these real lilies as the so-called trumpet lilies (*Calla Æthiopica*), which are in such general request at Easter.

Reference to past volumes, especially since 1866, will supply information on all the species and varieties of lilies hitherto cultivated in this country, save and except the very distinct *Giganteum*, which can now be disposed of in a few words, for there is really not much to be said about it. The first requisite in the cultivation of this plant is *patience*, for you may wait years ere you are rewarded with a bloom. It requires a rich, strong soil, plenty of water all the summer, and to be moderately moist all winter. It should be shifted into a larger pot every year as soon as the leaves die down, and in this process the roots should be preserved intact. After flowering, it should be divided, and the divisions potted into smallish pots, to be shifted on again to larger and larger pots until they flower. A cool greenhouse or pit is the proper place for it in the winter, and from the time it begins to grow it should have abundance of air and light.

S. H.

## NEW WAYS OF CULTIVATING LAPAGERIAS.

BY THOMAS TRUSSLER,

The Nurseries, High Path, Edmonton.



THE general cultivation of *Lapageria rosea* has been so clearly explained in the communications specially referring to it, which have appeared in the past issues of the FLORAL WORLD, that on the present occasion I shall not allude to it otherwise than in the briefest manner possible; my object in referring to it is simply to show that as yet its capabilities for general decorations are not well known, and to suggest that its cultivation should not be confined exclusively to the greenhouse and conservatory. At the present time the number is not large of cultivators who are aware that the conservatory is not the only place in which it can be grown with any degree of success, and I shall be probably doing good service by giving publicity to the fact that Lapagerias will grow with amazing vigour, and produce a profusion of flowers in the Orchid-house, and that it is sufficiently hardy to be grown entirely out-of-doors in the southern and western counties. Its cultivation may, therefore, be widely extended with advantage, and residents in warm, sheltered localities may plant it out-of-doors with the full assurance of being rewarded with a splendid display of flowers.

July.

It is possibly of less importance to know that the *Lapageria* makes a satisfactory growth in the orchid-house than it is to know that it is hardy enough to withstand the frosts and cold of an ordinary English winter. But in some instances the knowledge will be of considerable service, for there are not many stove-climbers really suitable for planting in the orchid-house. They are mostly too strong in growth, and the long shoots hang about and choke up the orchids arranged on the stages below, and the majority of slow growth soon become infested with scale, or mealy bug, and afford a ready means for the distribution of these pests over the whole collection. The growth of the *Lapageria* is free; but the habit is neat, and, with a very little attention, the shoots can be regulated so that they will in no way interfere with the other occupants. It is alone suited for the houses containing the *Odontoglossums*, and the species of other genera which thrive under what is generally known as "cool" treatment. In these structures it appears to be quite at home, for the temperature must not at any time during the summer season be excessive, and in the winter the temperature necessary for the preservation of the orchids in the best possible health is in no way hurtful, and the shade and moisture necessary for the orchids during the summer season are most beneficial. As an example of the success which attends the cultivation of this plant in orchid-houses, when it is well cared for in other respects, it may be well to state that in the *Odontoglossum*-house in the gardens of J. C. Day, Esq., at Tottenham, there is a large example which covers a portion of the roof, and produces annually an enormous number of flowers. Mr. Gedney, who has charge of Mr. Day's magnificent collection of orchids, manages it in a very simple manner. He thins out a portion of the shoots annually, and ties the others in regularly, to prevent their interfering with the growth of the plants underneath. The supply of water is most liberal, as in the case of plants in the conservatory, and the compost is also similar. Indeed, the only difference is in the temperature, which of necessity is considerably higher. When in an orchid-house, the plants commence to bloom in May, and continue to produce a succession until quite late in the autumn.

It may, perhaps, be well to mention the fact that *Lapagerias* and *Camellias* succeed admirably in the same house, and from this it may be inferred that the former are the finest of the climbing plants for the *camellia*-house, whether heated or not; and it is a fact well worthy of note that the flowers are produced during the months when there are no *camellias*. It may also be observed that a few good specimens regularly trained over the roof will, during a period of three or four months, produce sufficient flowers to make a really rich and satisfactory display.

In planting *Lapagerias* out-of-doors, a sheltered position should as far as practicable be selected, although they appear to be less particular upon this point than one is naturally led to suppose. In the nurseries of the old-established firm of Messrs. Lucombe, Pince, and Co., at Exeter, plants trained to a west wall have for some years past flowered with exceeding freedom; and the Rev. T. L. Boscawen, of Lamorran Rectory, Probus, Cornwall, has a specimen twenty feet

high, trained to a north-west wall of his residence, which in its season blooms very freely. Coming to less favourable localities than some of these here mentioned, in fact, to within seven or eight miles of the metropolis, we find examples doing well out-of-doors. In the gardens of Gunnersbury, the residence of Baron Lionel de Rothschild, there are several small span-roof houses, running north and south, and at the north end of one of these, two plants were some years since put out. The white and rose-coloured forms were both planted, one on the right hand, and the other on the left hand of the doorway, and they have done so well that the roof is now covered with a healthy growth. About three years since, one of the principal shoots, found its way outside, between the doorpost and brick wall; and instead of making an attempt to get the shoot inside the house again, Mr. Richards, the able head gardener, had it trained up the wall outside. It has made good progress since, and the severe weather of two of the winters since it has been outside has not injured it in any way.

Sufficient proof is here afforded that *Lapagerias* are quite hardy enough to justify their being planted out-of-doors; and as strong plants of the rose-coloured form can be obtained at a very cheap rate, there is no good reason why it should not be submitted throughout the country to a thorough trial out-of-doors. The beds should be formed with good turfy loam and peat, in about equal proportions, and broken up roughly. Underneath should be formed a nine-inch layer of broken bricks. The plants must during the summer season be watered most liberally; it will indeed be difficult to give them too much. The shoots, which push up in much the same manner as those of the asparagus, are very succulent and tender when a few inches in height, and precautions must be taken to keep the snails away from them, or they will be eaten as fast as they make their appearance above the surface. The plants should also have some slight protection during the winter season, until they become strong and well established. The white form of *Lapageria alba* is yet too expensive for planting out-of-doors.

## CULTIVATION OF SELAGINELLAS.

BY WILLIAM COLE,

The Grove Vineyard, Feltham.



THE Selaginellas, or Lycopodiums, form such a pleasing undergrowth in the fernery, and have, moreover, such a refreshing appearance in the conservatory, that much might be said in their praise, and a selection of the finest kinds should certainly have a place wherever conveniences exist for their culture.

There are, it may be proper to say, three distinct types amongst these interesting allies of the ferns, and the most useful are those of the type represented by *Selaginella Martensi* and *S. denticulata*. These combine a free growth with a handsome appearance in a very

July.

remarkable manner, and I shall confine my remarks exclusively to them. The few kinds of a scandent habit, such as *S. cæsia arborea*, are hardly wanted in houses other than those of large size, and such kinds as *S. Willdenowi*, which do not produce aërial roots, are of rather slow growth, and considerable skill is necessary in their cultivation.

Shade and moisture are the two chief elements of success in the cultivation of the kinds specially referred to, for when placed in a shady position, and watered freely, they grow very rapidly, and form splendid specimens in a very short time. Those of dwarf growth—such as *S. apoda*, which forms a dense mass of moss-like verdure, not exceeding an inch in height; and *S. denticulata*, which grows two or three inches high—should be put in shallow pans, and the kinds attaining a greater stature in deep pans, or in pots. The pans must be moderately well drained, and the soil light and open. If you obtain nice plants, in five-inch pots, turn them out of the pots, remove a portion of the lower part of the ball of soil, and put them in pans about twelve inches in diameter. For filling the pans, a mixture of loam, peat, leaf-mould, and silver sand, in equal proportions, can be recommended. A shady position must be afforded them, and they should be regularly sprinkled overhead once or twice a-day. It is a capital plan to place the pans between the specimen plants in the stove or greenhouse, according to the temperature required by the respective kinds; for the shade, which would be death to the majority of flowering plants, is necessary to their successful cultivation. They may, of course, be placed wherever they will be screened from sunshine.

Instead of shifting them into larger pans, as in the case of the ferns, and indeed of most other classes of plants, allow them to remain in the same pans until the end, and when they show signs of exhaustion, propagate a fresh stock. Prepare pans by first placing a layer of crocks in the bottom, and then filling them up to quite level with the rim with a compost as before advised. Then take rather large portions of the old plants, lay them down on the surface of the soil, and fix them securely by means of short pegs. In a surprisingly short space of time these will take root, and commence to grow freely. To produce a good specimen from cuttings is the work of a few weeks only. The plants may be maintained in robust health for a long period by sprinkling a little sand over them at intervals. Plants and sand should be quite dry, and sufficient should be applied to form a layer about a quarter of an inch in thickness, after it has been washed down with the aid of a watering-pot, to which a rose has been attached. *S. denticulata*, and others of similar growth, may also be occasionally cut back a little, and have a dressing of sand, for after the cutting back they soon produce new growth, and present the freshest appearance possible. The very best of those for the greenhouse and conservatory are *S. denticulata*, *S. denticulata variegata*, *S. helvetica*, and *S. involvens*; and for the stove, or temperate fernery, *S. caulescens*, *S. erythropus*, *S. Martensi*, and *S. Poulteri*. The first-mentioned is the very best for carpeting purposes, both in the stove and conservatory.

## AMONG THE STRAWBERRY BEDS.

BY J. E. SAUNDERS, ESQ.



THE strawberry crop is not over-abundant this year, although the quality is good, for the weather has not been characterized by that warmth and geniality we usually expect during May and June. The rain fall of May—the month of all others in which the strawberry plant requires an abundance of water to assist it in the development of foliage and flower-trusses—has been very small, so small, indeed, that it only amounted 0·286 in., which, it need hardly be said, is very much below the average. The temperature has been very low; and the easterly winds, which prevailed for so long a period, appeared, as it were, to take the life out of plants making new growth. We have done somewhat better than many of our neighbours, for we have access to a tank of liquid manure, in a farm-yard near at hand, and we have not been sparing of its contents. Moreover, the surface of the beds is covered with litter from the stable, which forms a more effectual mulch than clean straw; and the fertilizing properties washed out of it by the rains and artificial waterings, have afforded the plants material support. Many people object to covering strawberry beds with litter from the stable, because of their fearing that the flavour of the fruit undergoes some amount of deterioration in consequence; but the fears entertained are quite groundless, provided the beds are covered sufficiently early for the unpleasant odour to pass away before the fruit approaches maturity. I have my beds covered just as the flower trusses commence to push up, and, consequently, by the time the fruit commences to ripen, the litter is quite free from all offensive smell, and, in fact, from everything likely to injure the fruit in the least degree. The longest litter only is employed; and for some time previous to its being wanted we commence to prepare a supply, and this is done by shaking it free from the short stuff as it comes from the stable, and then putting it in a neat stack, where it can be covered with a tarpauling when rain is expected. Short grass has been tried several seasons, but it is so objectionable that I have determined to employ it no more. If the weather sets in wet, the grass decays, and the offensive odour is communicated to the fruit, to which, also, the grass adheres. If the weather happens to be dry, with an occasional shower, the grass shrivels up; and when the strawberries are moistened by dews or rains, they pick up the withered grass, and some difficulty is experienced in removing it.

I have a great objection to strawberries that have been handled much; and, when dining out, invariably decline them when they are dished up to form a cone, with the tops of the fruit pointing outwards, for I am quite aware that they cannot be packed up in this manner without passing through the hand several times. Strawberries, to my mind, are never so delicious as when eaten direct from the bed, just before the sun has acquired much power. We

must, of course, have them upon the dinner table ; and, excepting when we have company, the strawberries are gathered early in the morning, in a neat punnet, are put in a cool storeroom for the day, and, instead of transferring them to a dish, the punnet is stood in the dish, and a few leaves laid round. On other occasions, the dish is taken direct to the bed, and the fruit laid upon it as gathered. I attach great importance to gathering the fruit early in the morning, for it is invariably of a much finer flavour than when it has been exposed to brilliant sunshine for several hours, and the time it is upon the dish is not of sufficient length for it to lose a particle of its freshness.

Observations ranging over many years, and by no means confined to my own garden, have convinced me that the beds ought not to stand more than four years. After the fourth year, the plants begin to decline in vigour and productiveness, and the crop is consequently less in bulk and inferior in quality. The making of new beds is a very easy matter ; and to avoid any break in the supply of fruit for the dessert or preserving, I have two new beds made annually, and the same number broken up and destroyed. By this course we maintain the given number of beds in full bearing. We determine the position of the beds in the autumn, and, after a liberal dressing of manure has been spread over the surface, the ground is trenched up, and left in a rough state for winter. In the spring it is broken down with a fork, and early potatoes are planted. Shallow trenches are opened out, a little short manure is laid in the bottom, and the potato sets are laid along at the usual distance apart, and the trench is filled in. They are hoed and earthed up in the usual way, and, when lifted in the course of the summer, the ground is pricked over with a fork, and it is then in capital condition for the reception of the plants. The beds are four feet in width, with a twelve-inch alley between them, and two rows of plants are put out on each. The rows are planted twelve inches from the side of the beds, and by this arrangement, there is a space of three feet between every alternate row, which affords plenty of room for gathering the fruit, layering the runners, and so forth, without trampling upon the foliage. For the formation of beds, as well as for pot culture, I have the earliest runners obtainable layered in three-inch pots. The soil, from the first, is maintained in a nice moist state, to encourage the production of roots ; and when the runners are nicely established, they are separated from the parent plant, and removed to a shady position. They remain in the shade for a week or ten days, and are then planted out ; and to facilitate their becoming established, they are watered every second day until the roots begin to push freely into the soil. Watering them as here indicated will be found an immense assistance, for the plants are enabled thereby to commence growing early, and have, consequently, a better chance of forming strong, well-ripened crowns by the autumn. Beds formed as here advised, come into bearing the first year, and no time whatever is lost.

I have a larger number of sorts than the majority of amateurs require ; but I would advise the cultivation of, at least, half-



a-dozen distinct varieties. It is impossible to have a thoroughly good succession with a less number; and as they all differ somewhat in flavour, one does not soon feel tired of strawberries. For a small collection, *La Grosse Sucrée* and *Keen's Seedling* are the two best early sorts; *Dr. Hogg*, *Sir Joseph Paxton*, *President*, *Sir Charles Napier*, and *James Veitch* for mid-season; and *Frogmore Late Pine*, *Myatt's Eleanor*, and *Elton Pine*, for late use. Where space for a few varieties only can be spared, I would recommend *La Grosse Sucrée*, *Dr. Hogg*, and *Frogmore Late Pine*, as the three best strawberries grown. *British Queen* is the finest-flavoured strawberry we have; but it can only be grown well in a few places, and, in all cases, requires high cultivation. *Grove End Scarlet*, *Newton's Seedling*, and *Vicomtesse Hericart de Thury* are all specially adapted for preserving, as they produce fruit of high colour and piquant flavour. All the strawberries mentioned above will, however, make excellent preserves.

## THE BEST BEDDING PANSIES AND VIOLETS.

BY THOMAS MOORE, F.L.S.,

Floral Director of the Royal Horticultural Society.



LAST year a large and comprehensive trial of bedding Pansies and Violets was carried out in the gardens of the Royal Horticultural Society at Chiswick, and duly reported on by the Floral Director. Altogether eighty-two varieties were grown, and as exceptional opportunities were afforded for determining the merits of varieties, Mr. Moore's report possesses great value, especially so, now that the time for propagating a stock of these flowers for next year's display is close at hand.

The varieties of these plants subjected to the test of trial were contributed by Messrs. Dickson & Co., of Edinburgh; Messrs. Cocker & Sons, of Aberdeen; Mr. R. Dean, of Ealing; Mr. G. Westland, of Witley Court; Dr. Stuart, Messrs. Milligan & Kerr, and Messrs. Robertson & Galloway. Those only are here described which obtained certificates. In several instances the certificates granted in 1874 under less favourable conditions were now confirmed. The plants were inspected by the Committee on June 9th, and again on July 16th. The following may be regarded as a selection of the best of the bedding Pansies, chosen from the point of view of showing compactness and dwarfness of habit, profuseness and continuity of bloom, and useful and effective colours, rather than that of size and shape in the individual flowers—chosen, in fact, for those special features which give them their value as bedding plants:—

*Alpha* (Dickson & Co.).—A very compact-growing, vigorous-habited, free-flowering variety. Flowers large, bluish purple, with a

July.

reddish flush; the eye yellow, with a bilobed dark spot in front. Good and lasting.

*Bedfont Yellow* (Dean).—A free-growing, compact-habited sort. Flowers large, bright golden yellow, with pencilled eye. Good and effective.

*Blue Bell* (Dean).—A very showy variety, of compact, spreading, free-blooming habit. Flowers numerous, medium-sized, mauve-purple, with a small yellow eye, pencilled with dark lines. The individual flowers are deficient in shape, but the effect of the mass is good, and the plant is a continuous bloomer. Awarded a first-class certificate in 1874, which was now confirmed.

*Blue Perfection* (Westland).—Of compact, free-blooming habit. Flowers medium-sized, of a deep reddish mauve, with yellow eye. A fine, effective, self-coloured variety. The variety sent in as Purple Perfection proved to be the same as this.

*Dr. Stuart* (Stuart).—Of dwarf, compact habit. Flowers mauve-purple, with small yellow eye surrounded by a narrow dark ring. A neat and pretty flower.

*Golden Gem* (Dickson & Co.).—A variety of dwarf spreading habit and a free bloomer. Flowers large, deep yellow, with deeper eye, over which occur dark pencillings. Good and lasting. Awarded a first-class certificate in 1874.

*Lilacina* (Dean).—A charming variety of dwarf, compact, spreading habit, free-growing, and very distinct. Flowers of moderate size, the upper petals of a reddish lilac, the lower ones bluish lilac, with small yellow eye. An exceedingly pretty and taking flower.

*Lothair* (Dean).—A novel variety, with a dwarf, compact habit of growth. Flowers large, deep purple, with small yellow eye, and broadish bronzy spot just below it on the lower petal. A distinct and rich-looking flower, of lasting quality.

*Lily-white Tom Thumb* (Dean).—A very useful variety of free, compact, spreading habit. Flowers white, with yellow eye and dark pencillings. The flowers are tolerably constant as to purity, but they occasionally blotch in hot weather. The first-class certificate awarded in 1874 was confirmed.

*Magpie or La Pie* (Dean).—An old French variety, still useful because striking in appearance from the strongly-contrasted colouring of its flowers. It is of vigorous but rather tall-growing habit, of a hardy constitution, and an abundant bloomer. Flowers blackish mulberry, with a large, wedge-shaped spot of white at the tip of each petal; the spotting sometimes runs out, when for a time the flowers become self-coloured.

*Mulberry* (Dean).—A dwarf-growing variety, of compact but spreading habit, and free-flowering. Flowers dark reddish plum-purple, with very small yellow eye; the flowers are well displayed. The first-class certificate of 1874 was confirmed.

*Novelty* (Cocker & Son).—A showy variety, of free-growing habit, but growing rather tall. Flowers reddish or puce purple, with yellow eye; showy. A pleasing variety amongst the self-coloured flowers.

*Peach Blossom* (Dickson & Co.).—An attractive variety, of close

habit, and a free bloomer. The flowers, which are of good form, are of a curious motley colour, a reddish or puce lilac, paler at the tips. Its neutral tint was thought likely to be useful in grouping.

*Princess of Teck* (Dean).—A very free-growing variety, and a continuous bloomer. The flowers are large, of good form, and of a pale bluish lilac. It is quite novel in colour, somewhat approaching that of *Lilacina*.

*Queen* (Dickson & Co.).—A variety of free, compact habit, an abundant bloomer, but rather later than some others. Flowers large, white, with yellow eye and dark pencilled lines. The first-class certificate awarded in 1874 was confirmed. It is not, however, a lasting sort, as it was quite out of bloom when inspected in July.

*Queen of Lilacs* (Dickson & Co.).—A variety of free, bold habit, forming close, vigorous tufts. Flowers reddish lilac, paler at the edge, being freely produced; a soft neutral colour, and useful for grouping. It was considered to be novel and effective, and on these grounds received the certificate.

*Royal Blue* (Dean).—A deep purplish blue, with a dark eye. A showy and attractive flower, of good quality, and lasting.

*Sovereign* (Dickson & Co.).—Of close-growing habit, dwarf, free, and prolific of blossoms. Flowers moderate in size, of a bright deep golden yellow, with a pencilled eye. Very effective, and a good lasting variety.

*The Tory* (Dickson & Co.).—A variety of free and vigorous growth, blossoming abundantly and continuously. Flowers large, deep bluish purple, with white eye, and a bilobed mulberry spot in front of it. Good throughout the season. The first-class certificate awarded in 1874 was confirmed. Under the name of *Monarch* was grown a variety not distinguishable from this in the colour of its flowers.

*White Swan* (Dean).—A fine variety, of close tufted habit. Flowers of moderate size, pure white with pencilled eye, of good substance, and very clean and chaste-looking. Fine.

*Williams* (Stuart).—A free-blooming variety, raised from *Viola cornuta*, fertilized by *True Blue*, a dwarf *Viola*, like *Perfection*. It is dwarf and spreading in habit, the individual flowers being small, *cornuta*-like, and of a light mauve colour. The plant is very effective from the great number of its flowers, which are produced in succession till late in the summer.

THE CRYSTAL PALACE GREAT SUMMER FLOWER SHOW.—The display of azaleas, specimen roses, stove and greenhouse plants, ornamental-leaved plants, and other subjects proper to a great summer show, was on this occasion remarkably good; indeed, an exhibition more thoroughly satisfactory in every respect has probably not been held in the metropolis for many years past. The three chief features of the show were unquestionably the specimen roses, the stove and greenhouse plants in flower, and the plants remarkable for the beauty of their leafage. Azaleas also made a very brilliant display, orchids were well represented, and the miscellaneous groups were more numerous, and of a higher degree of merit than usual.

July.

# SEVENTY CHOICE WINTER-FLOWERING STOVE AND GREENHOUSE PLANTS.

NAME.	COLOUR.	Height in feet.	G, stove, greenhouse	REMARKS.
<i>Acacia ornata</i>	Yellow	5	G	A genus of highly-ornamental plants, readily propagated by seed and cuttings, and easily grown in peat, loam, leaf-mould, and silver sand. The time the young growth is matured the previous season and the temperature of the house will determine the relative season of flowering.
" <i>Drummondii</i>	Straw	3	G	
" <i>grandis</i>	Yellow	5	G	
<i>Acmea fulgens</i>	Scarlet	1	S	Bright, showy, curious, and interesting.
<i>Ameryllis Ackermanni pul- cherrima</i>	Crimson	2	S	By starting a succession of bulbs, a supply of these beautiful flowers can be had throughout the winter. Good turfy loam and rotten manure suits them admirably. A decided rest is of great importance, but those which retain their leaves should never be dust-dry.
" <i>Cleopatra</i>	Scarlet	2	S	
" <i>marginata conspicua</i>	Rosy white	2	S	
" <i>vittata superba</i>	Red-white	2	S	Fine stove herbaceous plant, remaining three months in perfection; fibry peat and thorough drainage.
<i>Anthurium Scherzerianum</i>	Vermilion-scarlet	1	S	
<i>Ardisia crenulata</i>	Scarlet berries	2	S	
<i>Aphelandra aurantiaca Roezli</i>	Orange-scarlet	3	S	Very attractive.
<i>Begonia Digswelliana</i>	Pink	2	S	A genus of useful stove plants, because of their free growth and good-flowering qualities. Cuttings struck in spring, and grown in an intermediate house through the summer, will make good plants by the autumn. Light and rich soil is essential to good culture.
" <i>fuchsoides</i>	Scarlet	3	S	
" <i>Saundersiana</i>	Red	2	S	
<i>Blanfordia Cunninghamii</i>	Scarlet-orange	2	G	A beautiful liliaceous plant, of easy culture. Pretty evergreen greenhouse shrub.
<i>Boronia Drummondii</i>	Pink	3	G	
<i>Camellia alba-plena</i>	Double white	10	G	
" <i>Beali</i>	Crimson	10	G	The camellia is one of the best winter-flowering greenhouse plants we have. We give the names of a few of the best, but all are attractive when not more than two feet high, and their beauty increases with size, if accompanied with good health. The plants must not suffer at any stage from want of water at the root, or, on the other hand, be kept too wet. The foliage must be kept clean, and the buds ought to be thinned down to one or two upon each shoot. Camellias are comparatively easy to manage as pot plants, but when planted out are still easier, and attain a development far surpassing the best specimens in pots.
" <i>Bonomiana</i>	White flk. car.	10	G	
" <i>Chandleri elegans</i>	Rose	10	G	
" <i>Countess of Ellesmere</i>	White-strip, rose	10	G	
" <i>Donckelaeri</i>	Red and white	10	G	
" <i>Lavinia Maggi</i>	White crimson	10	G	
" <i>Marchioness of Exeter</i>	Rose	10	G	
" <i>Mathotiana</i>	Crimson	10	G	
" <i>Rubens</i>	Rose	10	G	

<i>Correa cardinalis</i> <i>Crowea saligna latifolia</i>	Red Pink	3 3	G G	Requires careful management, and to be grown in good peat mixed with plenty of sand. Neat-growing shrubby plant, with pretty little pink flowers.
<i>Cyclamen persicum</i>	Various	1	G	The colours range from pure white to deep rose. Seed sown as soon as gathered will make fine plants for flowering the second winter after sowing. The plants must not be dried off the first year at all; but ever afterwards, a month or six weeks' entire cessation of growth will be necessary.
<i>Cytisus racemosus</i>	Yellow	3	G	Beautiful shrubby evergreen plant, producing a profusion of spikes of bright yellow flowers; seed or cuttings. It will grow well in fibry loam and leaf-mould.
<i>Daphne indica alba</i> " " <i>rosea</i>	White Rose	2 2	G G	Flowers small, but highly fragrant and invaluable for bouquets.
<i>Epiphyllum truncatum aurantiacum</i>	Orange	2	S	These make glorious subjects for the winter, grafted on the <i>Pereskia</i> , about a couple of feet from the ground-level. Turfy loam and peat, with a little brick rubbish and cow-dung, should be employed for growing them in. Push them on freely through the early part of the summer, and rest them thoroughly in the autumn.
<i>Epacris hyacinthiflora candida</i> " " <i>Lord Palmerston</i> " <i>Mrs. Prim</i> " <i>Viscountess Hill</i>	Scarlet Rose White Crimson Rose Orange-scarlet Blue	2 2 2 2 2 2 2	S S G G G G G	A beautiful genus of flowering plants that ought to be grown extensively in every greenhouse. The young shoots should be cut back after flowering, and the plants have every encouragement to make a strong growth afterwards. Peat and sand should be employed, and the pots must have a thorough drainage to carry off the water quickly. Admit plenty of air when the weather is favourable.
<i>Eranthemum pulchellum</i>	Pink	2	G	Beautiful dwarf shrubby plant, easily grown and flowered.
<i>Erica gracilis</i> " <i>hyemalis</i> <i>Eucharis Amazonica</i> <i>Euphorbia jacquiniæflora</i> <i>Franciscæ calycina major</i>	Rosy white White Scarlet Blue	2 2 1 2 2	G G S S S	Beautiful shrubby plants, belonging to the soft-wooded section of the great Heath family. Sandy peat and a free drainage are essential to their welfare. They need careful attention, and a cool, well-ventilated pit or house for their quarters.
<i>Gardenia Fortuneana</i> " <i>radicans major</i>	White "	2 1	S S	Useful for winter decoration; should be propagated from cuttings early in the spring. Beautiful evergreen shrub, growing freely in a mixture of peat, loam, and sand. Cuttings of half-ripened wood root freely in bottom-heat.
<i>Gesneria exoniensis</i> " <i>zebrina splendens</i>	Vermilion-scarlet "	2 2	S S	Evergreen stove shrubs, highly valuable for bouquets in the spring. Should be started into flower in a moist bottom-heat in spring, and also have the assistance of bottom-heat when making new growth.
<i>Goldfussia anisophylla</i>	Lilac	2	S	These are without exception the most beautiful winter-flowering plants we have. Both flowers and foliage are alike ornamental. The bulbs should be started in a moist bottom-heat, and be grown on through the summer in a cool stove. Loam, peat, and leaf-mould, with plenty of sand, and used rather rough, suits them best. They can be increased by the bulbs or leaves.
<i>Habrothamnus elegans</i>	Carmine	10	G	A pretty little evergreen shrubby plant, with gesneria-like flowers, succeeding under ordinary treatment. Free-growing evergreen shrub, admirably adapted for training up walls and pillars of the conservatory. It blooms on the last year's growth, and must not be pruned until after the beauty of the flowers is past.

SEVENTY CHOICE WINTER-FLOWERING STOVE AND GREENHOUSE PLANTS—Continued.

NAME.	COLOUR.	Height in feet.	G, greenhouse.	REMARKS.
<i>Imatophyllum minimum</i>	Orange	2	S	A beautiful evergreen liliaceous plant that does best in an intermediate house. Potted in turfy loam, peat, and a little manure, there will not be much difficulty in growing them well. A good rest is needful through the autumn and the early part of winter. Useful for training to walls or pillars, for supplying cut flowers. Beautiful free-growing plant, easily propagated from cuttings. A fresh stock of plants should be propagated every year. Beautiful evergreen shrub, thriving well under ordinary good treatment. Beautiful free-growing plant, easily grown and propagated. An intermediate house suits it best. Beautiful evergreen shrubby plant, requiring ordinary good management. Beautiful for winter decoration. A fresh stock should be propagated every spring.
<i>Jasminum grandiflorum</i>	White	3	G	
<i>Justicia spectosa</i>	Purple	1	S	
<i>Luculia gratissima</i>	Red	3	G	
<i>Monochaetium ensiferum</i>	Rose	2	G	
<i>Plumbago coccinea superba</i>	Scarlet	2	S	
<i>Poinsettia pulcherrima</i>	"	3	S	
<i>Rhododendron Countess of Haddington</i>	Blush	4	G	
" <i>Princess Alexandra</i>	Rose	4	G	
" <i>Princess Royal</i>	Pink	4	G	
<i>Rogiera gratissima</i>	"	3	S	
<i>Solanum Weatherill's Hybrids</i>	Scarlet berries	1	G	Evergreen shrub, of considerable beauty and interest, requiring the same treatment as <i>Ixoras</i> and <i>Rondeletias</i> . Beautiful berry-bearing plants, of a very compact habit. Sow the seed early in the spring, and grow in cold frame after May. Pot in loam, leaf-mould, and rotten manure. Beautiful upright-growing plant, with long drooping racemes of bright-coloured flowers, one of the grandest plants for table decoration in existence. Cuttings rooted early in the spring will easily make good specimens by autumn. Pretty evergreen shrub, requiring the same treatment as the generality of New Holland plants. Very handsome herbaceous perennials, requiring the same treatment as the <i>Geneseras</i> . Pretty liliaceous plant, growing in good turfy loam and leaf-mould. A dwarf-growing plant, with prettily-marked foliage and brilliant flower-scapes.
<i>Thysanacanthus rutilans</i>	Crimson	2	S	
<i>Tremandra ericæfolia hirsuta</i>	Lilac	3	G	
<i>Tydea Baron de Pret</i>	Scarlet	1	S	
<i>Tettheimia viridifolia</i>	Pink-white	1	S	
<i>Trixis splendens</i>	Scarlet	1	S	

## BUDDING ROSES ON THE MANETTI.

BY HENRY TAYLOR, ESQ., FENCOTE.



THE following practice has been found to answer admirably. Where the bud has failed on a manetti, I cut the stock down quite close to the ground, or, better still, an inch lower than the ground, if it is a good strong stock. Three or four stout shoots are sent up. Early in July I bud every shoot; in about three weeks or a month the ties are loosened, and no further care is taken of them until the year following, when in the month of March I head all the shoots down to just one eye above the bud. This eye is left to draw sap. If any of the buds do not start, I stop back the sap-bud after it has grown from four to six inches. If the bud is still obstinate, I cut the sap-bud clean out, then the rose-bud starts into growth at once. By June or July I have from three to four roses growing upon one manetti stool. When the roses have made growth about a foot long, I form a mound of soil about the stool, covering the junction of the buds about an inch; this operation causes the manetti shoots to emit roots. Early in September I pull down the mound of earth, and examine for roots; at the same time with a strong knife I partly detach the manetti shoots from the old stem; I then raise up the mound of earth again, and roots are almost certain to be formed during the autumn. In February I take up the whole stool, and split off every shoot which is now a manetti rose, and plant them in the usual way, covering the junction an inch, or rather more. There are two advantages gained by adopting this system. The first and most especial one for the amateur is, that there is a greater certainty of his buds taking, because he buds on wood of the same season's growth; the second advantage is, he gets three or four manetti roses from one stool. Some of the shoots at planting time will probably not have emitted roots; but I find in practice when planted out, and the rose cut down to about six inches, that roots are soon produced. It must be borne in mind that manetti stocks intended for this sort of work must not be prepared like currant and gooseberry cuttings, which have all eyes cut out except three or four at the top.

## WINTER SALADING.

BY GEORGE SMITH.



REFERENCE to winter salads may, to many readers, appear out of place at midsummer, and it may be well to remind those who feel disposed to pass this communication by because of its supposed unseasonableness, that to have a well-filled salad-bowl in winter, preparations must be made in the course of the ensuing month. Indeed, some of the saladings have to be raised from seed sown in the spring season; but as they are mostly of minor importance, it is not

July.

of much consequence if no steps whatever have been taken towards securing a supply of salading for the winter season. Exception must, however, be made to beetroot, which is quite indispensable, and must be raised from seed sown some time in May. The most useful of the winter saladings are lettuce and endive, for from these and a few slices of beet-root, a first-class salad may be prepared; and special attention should, in consequence, be directed to securing the needful supplies. Chicory and dandelion are both useful, as it is quite an easy matter to obtain a plentiful supply, and the leaves, when nicely blanched, give the salad a peculiarly elegant appearance; but the slight bitterness characteristic of these things is not liked by some people, and, provided there is no scarcity of lettuce and endive, they may be both dispensed with.

LETTUCE is undoubtedly the most valuable of all the saladings, for with a little management, a good supply may be had throughout the winter. A multiplicity of sorts is not desirable, for they only perplex the cultivator, and add materially to the labour. Four sorts will be quite sufficient, namely: *Hick's Hardy Green Cos* and *Victoria Cabbage*, for the first two sowings, and *Brown Bath Cos* and *Hammer-smith Cabbage* for the last sowing. To secure a good supply from October to the month of April, three sowings will be necessary, and these should be made on July 15th, August 15th, and September 15th, or thereabouts. It will not be of much consequence if the sowings are made a few days before or after the dates here given, with the exception of that in September, which may be a few days earlier, but it must not be later, or the season will be too far advanced for them to attain their proper size. The produce of the first sowing will come into use by the end of September, and, with the aid of cold frames, may be had in perfection until quite the end of November. Protection the lettuce must have, for they will have solid hearts and suffer considerably from exposure to the autumn frosts and rains. They should be lifted carefully, with moderate balls of soil, and be replanted in a cold frame. The second sowing should be made in a small bed, and the plants be put out as soon as they become large enough to be moved with safety.

In planting lettuces from the seed bed, put the largest in an open quarter, the second size on a south border, and the third size in a double line at the foot of a south wall. The largest plants must be lifted early in October, and put in frames as already advised. The second size must have frames of some kind put over them as soon as protection becomes necessary, and they must therefore be arranged in beds of a convenient size, to receive the frame. Those of the third size can be readily protected from frost and wet by means of a broad board placed over them, in a sloping direction, with the upper edge resting against the wall. The plants raised from the last sowing should, some time in October, be planted under hand-glasses, or in cold frames. They will not attain a very large size; nevertheless, they will be most useful for yielding a supply from February onwards. A portion of the plants may be put out on a south border, with a chance of their standing the winter. If they are uninjured, they will be exceedingly valuable for forming a



succession to those in the frames; and if they are killed, the cultivator will be no worse off than he would have been had they not been planted. The frames in which lettuces are put must be ventilated freely whenever the weather is favourable; but they must be carefully protected from rains and heavy dews, for damp and moisture are more injurious than frost. Indeed, when lettuces are quite dry, they suffer very little injury from a sharp frost. It is at all times necessary to tie lettuce up in dry weather; but during the autumn and winter, special care is necessary, for when tied up in a damp state they very quickly rot.

ENDIVE requires much the same cultivation as lettuce, and it is consequently not necessary to deal with the details at any great length. Three sowings will be necessary for the production of a good supply. The first sowing to be made about July 10th, and the second and third sowings a fortnight and a month later respectively. The best sorts are the *Green Curled* and *Broad-leaved Batavian*. The *Moss Curled* is a very elegant little variety, and can be recommended for the first sowing; but it is not so profitable as the *Green Curled*. Make the first sowing where the crop is to remain until full grown, and the others in beds, and transplant as soon as the plants are sufficiently advanced. In putting out the earliest plants, the *Broad-leaved Batavian* should be fifteen inches apart, and the *Green Curled* twelve inches apart. Those raised from the second sowing will not attain so large a size, and the first-mentioned will have sufficient space if twelve inches apart each way, and the other if nine inches. The soil must be moderately rich, and the plants should be put in shallow drills, and when about half-grown, have a little soil drawn to them. This keeps the leaves closer together, and they can be tied up more readily at the proper time than is possible when the leaves are allowed to spread freely. It is necessary to afford them some protection from damp and frost after the end of October, and they may be removed to a cold frame or one of the fruit houses at rest. The more advanced portion of the crop may be protected from frost by simply turning flower-pots over them when frost is expected. They may also be kept in good condition several weeks if lifted, and placed rather close together in a dry outhouse. They must be in a nice dry state when lifted, or they will soon decay. The plants from the last sowing may be planted in a frame or close to the foot of a wall, where protection can be afforded them by means of straw hurdles or spare lights.

CHICORY and DANDELION are much liked by some people, and to produce a good supply of blanched leaves is not a serious business. The seed of the Dandelion, of which the form known as the *Improved Thick-leaved* is the best, must be sown in March or April, and the Chicory in May. In both cases, sow in drills fifteen inches from each other, and thin to a distance of nine inches apart in the rows. Keep the beds free from weeds, and in November lift the roots, and lay them in by their heels in a spare corner, and in severe weather, cover with leaves or short litter. From the reserve bed they may be taken to a cellar or mushroom-house, as required. The

first lot should be put in about the middle of November; and to maintain a regular supply, introduce successional batches at intervals of a fortnight or three weeks. The roots should be placed in an upright position, with very little soil between them. They may also be put into deep boxes, and be covered closely to exclude the light, and the boxes be placed under the stage of the greenhouse, or in a cucumber house. The leaves must be developed in perfect darkness, or they will be inferior in quality.

## THE POTTERY TREE OF PARA.

BY JOHN R. JACKSON,

Royal Gardens, Kew.

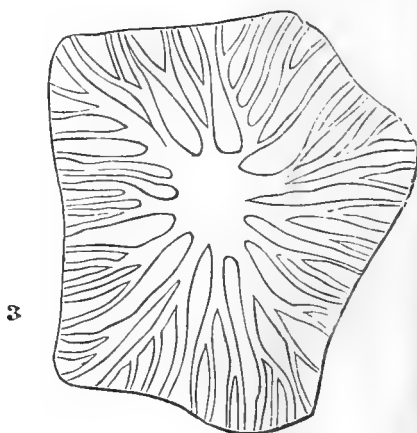
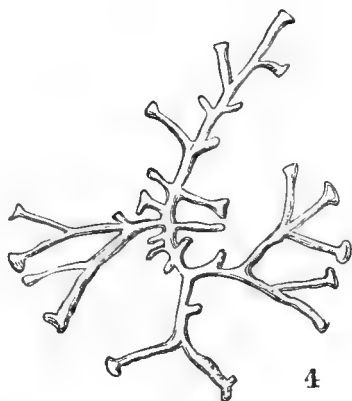
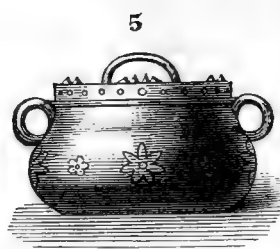
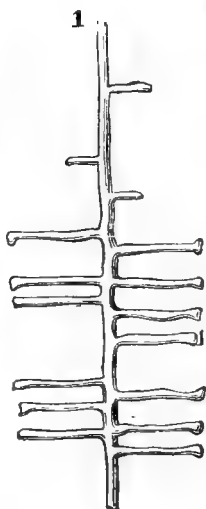
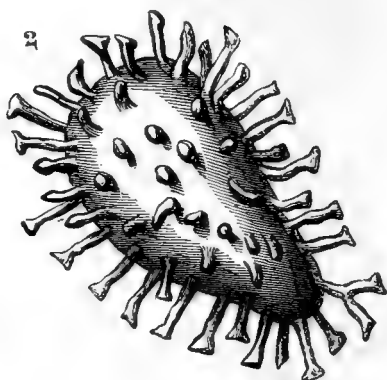


**A**MONGST vegetable economic products the barks of various plants hold a prominent place, whether for medicinal, manufacturing, or other purposes. The structure and formation of all barks are more or less similar, though the contents of the cells vary much in different plants,—thus we have soft or fibrous, hard or woody, and even stony barks, and the bark of the pottery tree of Para is a notable example of this latter. To outward appearance, the formation of the bark in many plants would appear to bear no relation one with another, as, for instance, the cork of commerce compared with its near ally the bark of the common oak, and again with the fibrous barks of many of our British trees. Naturally, the bark of a tree is, at first, composed of uniform cellular tissue, similar to the tissue of the central portion of the stem. The formation of the layers in the fully-developed bark is on the reverse system to that of the woody layers of the stem, the inner portion being the most vascular, and the outer portion the most cellular. Between the wood and the first formation of bark lies the cambium layer, a single series of nucleated cells, which originally are connected with both wood and bark, and perform certain functions in the formation of the woody fibres of the inner bark, and likewise in adding to the cells of the medullary rays of the wood. The innermost part of the bark next the wood, or rather next the cambium layer, is called the liber, or endophlæum; next to the liber, which is the fibrous part, the cellular part is placed, called the mesophlæum, or middle bark; and next that the epiphlæum, or outer bark. These three divisions are usually included under the general term of cortical layers. It is from the liber, or inner bark, which is composed of fibres more or less long and tenacious, that our most valuable commercial fibres are obtained.

In some plants the fibrous system prevails through the inner bark; but we shall have occasion to speak more fully upon these particular kinds at another time. What we have to deal with at present is a noted example of the harder, more woody, or more silicious barks, which example is to be found in the Para pottery tree. This is a large tree of very straight and slender growth,

attaining a height of 100 feet before giving off any branches; the diameter of the base is seldom more than one foot, and rarely exceeds fifteen inches. The wood itself is very hard, and, as will be presently seen, contains a great deal of flinty matter. The tree—which is called in Spanish *El Caouto*, or *El Caouta*; in French, *Bois de Fer*; in Brazil, *Caraipe*; and in English, *Pottery Tree*—is now known to botanists as the *Moquilea utilis*, *H.f.* Aublet was the first to bring the tree into notice, and it was at one time placed in the natural order *Ternstræmiaceæ*, under the name of *Caraipe angustifolia*. Further information and research, however, has caused it to be placed where it now is. Sound and durable as the wood is, it is on the bark that the natives set the greatest value. The Indians employed in the manufacture of pottery from its bark, always keep a stock of it in their huts for the purpose of drying or seasoning it, as it burns more freely, and the ashes are collected with greater ease, than when it is fresh. For the manufacture of the pottery the ashes of the bark are powdered and mixed with clay; the purest clay that can be obtained from the beds of the rivers is preferred on account of its taking up a larger quantity of the bark ash, and producing a stronger kind of ware. The most valued bark, or that which contains the largest quantity of siliceous matter, is produced by trees which grow in a rich but dry soil. Those growing in low or sandy forests being much inferior in the quality of this deposit. In the best kinds, the siliceous matter can readily be seen with the naked eye; but to test the quality of the various kinds of bark, the natives burn it, and then try its strength between the fingers. If it breaks easily it is considered of little value; but if, on the contrary, it requires a pestle and mortar to break it, its quality is pronounced good. Though the proportions of ash and clay are varied at the will of the maker, and according to the quality of the bark, a superior kind of pottery is produced by mixing equal portions of fine clay and powdered ashes of the bark. All sorts of vessels, of large or small size, for domestic or household use, are made of this kind of ware, as well as vases or ornamental articles, some of which are painted and glazed, as in Fig. 6, which is a representation of a specimen in the Kew Museum. The figures upon this vase are not burnt in, but are merely superficial, the colour being laid on with a brush, and secured by a coat of glaze. Fig. 5 is a representation of an unglazed pot, with lid, the figures of which are in relief. Articles made of this ware are very durable, and will bear almost any amount of heat; they are consequently much used by the natives for boiling eggs, heating milk, and, in short, for general culinary purposes.

Having shown the great value of this bark to the natives for a purpose which, to say the least, is novel in the application of barks, we will endeavour to arrive at the cause of such an adaptation by a brief exposition of its component parts. The bark seldom grows more than half an inch thick, and is covered with a skin or epidermis frequently covered with lichens. A superficial examination shows nothing out of the common; the fresh bark, however, cuts somewhat similar to a soft sandstone; but, when dry, it is very brittle and flint-like, and sometimes difficult to break. By biting a



POTTERY TREE OF PARA.

piece of the bark, the presence of siliceous matter can be well ascertained, as it grates between the teeth like fine sand. If we examine a section under the microscope, we find all the cells of the different tissues or layers are more or less silicated, the siliceous matter forming in the cells while the bark is very young. In the inner bark the siliceous matter or flint is deposited in a very regular manner, as will be seen by Fig. 1. The flint, however, from the ash of a porous cell of the bark, assumes a very different appearance, as shown in Fig. 2. Fig. 3 shows a porous cell macerated, and Fig. 4 is a flint skeleton from a similar cell. The bark of young trees and branches contain a much larger quantity of water than that of old trees; the proportion of water, however, is more equal in the old and young woods. From an analysis made of both the old and young barks, the old was found to give 30·8 per cent. of ash, and the young bark 23·30. Of the different layers of the old bark, the outer gave 17·15 per cent., the middle, 37·65, and the inner, 31. A larger percentage of ash was yielded by the bark of an old branch, which was found to give 77. In comparison to the bark, the wood is relatively poor in siliceous matter, the duramen, or old wood of an old trunk, giving only 2·5 per cent., and the alburnum, or young wood, 2 per cent. only.

The wood, bark, ash, and various specimens of the manufactured pottery, may be seen in Kew Museum.

## ROYAL NATIONAL TULIP SOCIETY.

*(From our own Reporter.)*



THE Royal National Tulip Society again held its annual exhibition at Manchester, and although the flowers were hardly up to the average in point of quality, the display was exceedingly good. It was intended to have held the show in the gardens of the Manchester Botanical and Horticultural Society; but, owing to the lateness of the season, it was at the last moment found necessary to postpone the gathering, and advantage was taken of the opportunity afforded by a meeting of the Botanical Society for holding the Tulip Show in the Town Hall. The exhibition afforded ample evidence of the wisdom of the management in postponing the show, and it is questionable whether it might not have been postponed another week with advantage, for many of the flowers bore unmistakable evidence of forcing. The "forcing" of show tulips consists in cutting partly-developed flowers some time before the show, and, after the stems have been placed in vessels containing warm water, they are removed to a warm corner of a greenhouse or the plant stove until reaching a certain stage of development. When flowers have to be forced into bloom, a thorough knowledge of the peculiarities of each variety, and the exercise of the utmost care, are alike necessary; but with the most skilful manipulation, it is impossible to present flowers equal in quality to those which remain upon the plants until within a brief period of their being staged. But this year, unless the expansion of some of the later flowers had been assisted by artificial means, a proportion of the exhibitors would have been quite unable to put in an appearance. The classes were, as in previous years, arranged under two leading divisions—one comprising the rectified or broken flowers, known respectively as *hyblæmens*, *bizarres*, and *roses*, and the other *breeder* or *self-coloured* flowers.

The most important class in the division for rectified or broken flowers was that for twelve dissimilar varieties. The competition was brisk, and the flowers contained in the several stands were mostly of excellent quality. The first prize was awarded to Mr. Whittaker, 77, Peru Street, Salford, for a fine stand containing

July.

blooms of flamed bizarre Sir Joseph Paxton and Dr. Hardy, feathered bizarre Demosthenes and Masterpiece, flamed rose Mrs. Lea and Mabel, feathered rose Mr. Lea and Industry, flamed byblœmen Sylvester—a promising flower broken by Mr. Hepworth,—and Talisman, and feathered byblœmen Adonis and Violet Aimable. The second place was occupied by Mr. Lea, Leigh, with blooms of flamed bizarre Dr. Hardy and Prince of Wales, feathered bizarre Gratitude and Seedling, flamed rose Aglaia and Triomphe Royale, feathered rose Heroine and Seedling, flamed byblœmen Adonis and Duchess of Sutherland, feathered byblœmen Norah Darling and Seedling. Mr. J. Hague, Stockport, third with flamed bizarre Masterpiece and Sir Joseph Paxton, feathered bizarre George Hayward and Masterpiece, flamed byblœmen Adonis and Talisman, feathered byblœmen Sarah and Violet Aimable, flamed rose Algaia and Mabel, feathered rose Mabel and Mrs. Lea. In the class for six dissimilar varieties to comprise one flamed and one feathered flower of each class, no less than eleven stands were staged. Mr. C. Forman, Chellaston, Derby, first with flamed bizarre Dr. Hardy, feathered bizarre Demosthenes, flamed byblœmen Duchess of Sutherland, feathered byblœmen Mary Forman, flamed rose Triomphe Royale, and feathered rose Heroine. Mr. T. Haynes, 63, Regent Street, Derby, second with flamed bizarre Sir Joseph Paxton, feathered bizarre Masterpiece, flamed byblœmen Duchess of Sutherland, feathered byblœmen Adonis, flamed rose Aglaia, feathered rose Heroine.

We now come to the classes for flowers as shown in pairs and triplets, and in some of these the leading flowers were of superb quality. For three feathered flowers Mr. Haynes was first, and staged bizarre Sir J. Paxton, byblœmen Adonis, and rose Heroine. Mr. H. Housely second with bizarre Sovereign, byblœmen Adonis, and rose Mabel. Mr. Whittaker third with bizarre Demosthenes, byblœmen Violet Aimable, and rose Seedling. Mr. C. Barnes, Birmingham, fourth, with bizarre Charles X., byblœmen Violet Aimable, rose Mrs. Lee. For three flamed flowers, one of each class, Mr. T. Mellor, Ashton-under-Lyne, was first, and presented fair blooms of bizarre Masterpiece, byblœmen Duchess of Sutherland, rose Mabel. Mr. Haynes was a grand second with bizarre Sir J. Paxton, byblœmen Talisman, rose Aglaia. Mr. Forman third with bizarre Sir J. Paxton, byblœmen Duchess of Sutherland, rose Sarah Headly. The first place for a pair of flowers was occupied by the Rev. F. D. Horner, who staged splendid blooms of flamed byblœmen Adonis, and feathered rose Mrs. Lomax. Mr. Haynes second with flamed bizarre Salvator Rosa, and feathered bizarre Masterpiece.

In the class for the best single blooms of each of the six classes some remarkably fine flowers were staged. The premier flamed flower was bizarre Sir J. Paxton, exhibited by Mr. Whittaker, and the premier feathered flower bizarre Masterpiece, from the bed of Mr. T. Haynes.

The breeders made an exceedingly rich display. In the principal class for six distinct varieties, two of each class, Mr. S. Barlow, Stakehill House, Chadderton, was awarded the first prize for grand blooms of bizarre Sir J. Paxton and Excelsior, byblœmen Glory of Stakehill, and rose Annie Macgregor and Hepworth's 169. The premier flower in the breeder classes was Dr. Hardy, exhibited by Mr. Haynes.

### ROBINSON CRUSOE'S BELL-FLOWER.



ESSRS. VEITCH & SON, of Chelsea, have lately obtained from Juan Fernandez—the island on which Alexander Selkirk was cast, and hence in some sense the scene of Robinson Crusoe's exile—a charming little plant, which Dr. Hooker has named *Wahlenbergia tuberosa*. It is a campanulaceous plant, bearing bell-shaped flowers, which are white, with bands of rose red on the outside; the leaves linear, bright green, and the whole plant characterized by delicacy and neatness, save the root, which is an anomaly. The root stock is tuberous, and resembles a cluster of potatoes stuck on the top of the

pot. Dr. Hooker says of it, "The contrast of these grotesque objects with the exquisitely graceful, thread-like stems and profusion of pearl-white, rose-streaked blossoms, is exceedingly striking, and



WAHLENBERGIA TUBEROSA.

recommends the plant as a desirable one for the greenhouse, and probably for out-door culture."

July.



## SPRING CABBAGES.

BY A KENTISH GARDENER.



ALTHOUGH the Cabbage is usually considered a very common-place vegetable, there must be no disguising the fact that for certain seasons of the year it has no equal amongst the vegetables that may be brought to perfection in the open quarters. Especially valuable is the cabbage during the months of May and June, when it must be confessed that green vegetables are not over plentiful, even in gardens of considerable extent, and under the charge of the most skilful practitioners. The broccolis and kales which constitute the most useful of the winter vegetables, become scarce by the time May is fairly in, and with the exception of the spinach and the earliest of the peas, the crops properly belonging to the summer are not available for the table until quite the end of June. It is in these two months that cabbage may be had in abundance, and also in the highest degree of perfection. Cabbages, when well grown, are exceedingly good in October and November; but to my mind, they are never so tender and delicious in flavour as in May and June. The labour necessary to produce a really good crop of cabbages fit for the table in these months, is not so great as to impose a severe strain upon the resources of the cultivator; and, on the other hand, it must not be supposed that because they do not belong to the aristocracy of the kitchen garden, good crops can be had without any trouble. As a matter of fact, they must have good cultivation, and the various details receive attention at the proper moment.

I have thought it desirable to direct attention to the matter now, because to have a good supply of cabbage next spring, a beginning must be made in the course of the current month. To grow the best sort for the season is of primary importance, and to afford all the assistance possible I will first of all say that after growing at different times the greater proportion of the varieties entered in the trade lists, I have arrived at the conclusion that *Atkins's Matchless* and *Wheeler's Cocoa Nut* are the two best sorts of small growth, and *Enfield Market* the best of those attaining a large size. It is an excellent plan to grow an equal proportion of each, as they are ready for use in the order in which the names are placed, and form a succession. The time of sowing the seed must be regulated by the locality and the sorts grown, and no date can be given as applicable to all the sorts and the various localities. The season for sowing the seed may be said to extend over a month, commencing with the middle of July, and as affording a good idea of the best time for sowing the several sorts, it may be said that in cold localities northwards, *Enfield Market* and other large sorts, are best sown about July 15; and *Atkins's Matchless* and other small, quick-hearting kinds, three weeks afterwards. In the midland counties, the respective sowings should be made in the third week of July and the second week of August; and in the south, the sowings



should be made in the first and fourth weeks of August respectively. With this intimation readers will have no difficulty in determining the dates best suited to the locality in which they reside.

The seed should be sown in drills, about a foot apart, and upon ground which has been reduced to a fine tilth. If the soil is at all dry, fill the drills with water, and sow as soon as it has soaked away. This is an important point, because when sown in dry soil there is a risk of the seed laying dormant for several weeks, as it will not germinate until the soil has been moistened in some way. It is a common practice to sow broadcast in beds, but drills are much preferable, as the plants have a good chance of acquiring strength, without being overcrowded, and transplanting is in consequence rendered quite unnecessary.

The quarter selected for spring cabbages should be sheltered, and in preparing it for the reception of the plants, enrich the soil with manure, and dig it over deeply. The plants must be put out as soon as they are of a suitable size, and the distance at which they are put apart must be regulated by the size of the respective kinds. Atkins's Matchless should be planted twelve inches apart, in rows fifteen inches from each other. In poor soils they may be twelve inches apart each way. Enfield Market requires to be from eighteen to twenty inches apart each way. If the planting has to be done in dry weather, draw shallow drills, pour water along them, and proceed to plant, and the results will more than justify the additional labour incurred. In the course of the autumn, and again in the spring, stir the space between the rows with the hoe, for the purpose of keeping the weeds down and the surface loose. The plants left in the drills after the quarters have been filled, ought not to be destroyed, for in the course of the winter blanks will occur, and the importance of having a reserve to draw upon for filling up the places that have become vacant in the rows, need not be urged.

## THE MYRSIPHYLLUM.

BY J. F. JONES, NEW YORK.



**I**N late years the *Myrsiphyllum* has acquired a considerable degree of importance in America, and as it may be grown quite as successfully in England, and employed for the same purposes as here, a few particulars of its character and cultivation will probably prove interesting to many of your readers.

It is a liliaceous plant, introduced from the Cape of Good Hope, and has long slender shoots, which make rapid growth, and are remarkable for their extreme elegance. These shoots are very slender, branch freely, and are regularly furnished with rather small leaves, which are of a remarkably rich green colour. These shoots are produced, under a suitable course of culture, during the autumn and winter months, and are so valuable for intermixing with cut

flowers in dressing epergnes and vases, and also for bouquets of all kinds, that they are held in the highest esteem by those who make it their business to supply New York and other great centres in the States. The demand is, indeed, so large that in some of the establishments in which plants and flowers are grown for market purposes, whole houses are devoted to its culture. In private gardens also it is grown rather extensively, and I would suggest whether it may not be advantageously cultivated in English gardens also. Whether it would prove remunerative as a market plant in England I cannot pretend to say. But I am of the opinion that if the London bouquetists once made its acquaintance a brisk demand would soon spring up. Plants neatly trained are remarkable for their extreme elegance, and are exceedingly well suited for the decoration of indoor apartments; and as the shoots retain their freshness for a considerable period after their removal from the plants, it is no wonder that they are so much sought after by the American bouquetists. It is not an expensive plant, for it is now plentiful, and can be multiplied at a very rapid rate by means of seed.

Plants of the *Myrsiphyllum* can probably be obtained at some of your great nurseries; but I should advise the amateur to commence with a packet of seed, as affording the cheapest means of raising a stock. I am unable to offer any advice as to where seed can be obtained in England; but I can give information of a thoroughly reliable character as to the way of raising a stock of plants from it. The best period for sowing is from the middle of July to the third week in August, because the seed will then germinate readily, and there will be sufficient time for the seedlings to become well established by the winter. The best cultivators here sow in shallow boxes filled with loam, leaf-mould and sand; the loam being broken up fine, and the leaf-mould and sand added, in the proportion of a part each to three parts of the loam. The boxes are put in a pit or house, kept close, and rather cool than otherwise. A hotbed, which is usually regarded as a pure necessity in the raising of seedlings, is in this case quite unnecessary, and, in fact, not desirable, for the seed does not germinate so freely upon a hotbed as when in coleus house or pit. The regular sprinklings for the purpose of keeping the soil in a nice condition as to moisture and the shading needful to prevent the surface-soil drying rapidly, must have due attention, as in the case of raising seeds of all kinds. Over-crowding in the seed-boxes is not desirable, and as soon as they are large enough to handle, lift carefully with a piece of pointed stick, and put them separately in small sixties. Remove them to a warm house, as they want the assistance of a genial temperature during the first winter, to enable them to maintain a steady growth until the spring season. Like many other liliaceous plants, they require a thorough season of rest, and this can be readily given them. The supply of water must be gradually withheld, commencing to lessen the supply about the middle of March; and when the foliage has turned yellow, and the stems begin to die down, withhold it altogether. When the latter are quite dead, pack them away underneath a stage in the greenhouse, and if the pots are laid upon their sides, the plants will be

placed under the conditions most favourable to their enjoying a thorough rest.

Early in August they will commence to grow freely, the first indication of a renewal of activity being the appearance of the young shoots above the surface of the soil. When these can be seen, they must receive immediate attention, for they will receive considerable injury if long neglected. Ample space for the spread of the roots and an abundance of water, are two essential features in their cultivation. From the small sixties, transfer to eight-inch pots, putting one plant in each, and employ a compost of three parts turfy loam, two parts old decayed manure, and one part of sharp sand. Water moderately first, but as they progress in growth, and the roots extend freely, the supplies must be more abundant, and on no account must they suffer from a lack of moisture in the soil. If the latter is allowed to become dry, and remain so for a very short period, the leaves will assume a yellowish colour, and eventually fall off, and the plant necessarily becomes quite worthless. They want syringing occasionally, to prevent the inroads of red spider, which has a decided partiality to the foliage. Healthy plants will produce on an average six shoots each, and these are cut and sent to market when about five feet in height. Strings on a trellis of some kind must be provided for the support of the slender shoots. Here the market growers train them to strings, about three shoots to each, and when of the length mentioned above, each string realizes about a quarter of a dollar. In private gardens they are frequently trained to wires fixed to the roof.

The second spring they should be dried off early in April, and again have a thorough rest, and in August following be shifted into pots one size larger. The second winter they will produce more shoots, and grow with greater vigour, and also flower and produce seed. The flowers are small, of a greenish white, and decidedly fragrant, and the fruit is of a bright red colour, and contains from three to five seeds. Weak liquid manure may be applied with advantage when the plants are in full growth.

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MANCHESTER ROYAL BOTANICAL SOCIETY'S WHITSUN EXHIBITION, JUNE 2 TO 8.—This exhibition well sustained the high reputation enjoyed by this important society for the completeness and splendour of its Whitsuntide exhibitions, and afforded an immense amount of gratification to the tens of thousands of the Manchester people who resort to the society's gardens, at Old Trafford, on Whit-Monday. The old arrangement was adhered to: the exhibition-house was filled with stove and greenhouse plants and cut flowers, and the great tent was laid out as a garden, and tastefully arranged with groups of roses, rhododendrons, azaleas, pelargoniums, and lilies; these being relieved with abundant greenery in the shape of pyramid ivies, ferns, lycopodiums, coniferous trees, and a groundwork of grass banks. The scene as viewed from the mound at the head of the tent was not only pleasing but rich and high toned, justifying all Mr. Findlay's skill in designing and care in carrying into effect the general scheme of a picturesque display. The show was rich in highly meritorious contributions, especially of orchids, new plants, pelargoniums, ferns, and cut flowers, and as a whole was full and brilliant and thoroughly enjoyable.

July.

## THE GARDEN GUIDE FOR JULY.

I WALK'D the fields at morning's prime,  
The grass was ripe for mowing;  
The skylark sang his matin chime,  
And all was brightly glowing.

"And thus," I cried, "the ardent boy,  
His pulse with rapture beating,  
Deems life's inheritance is joy—  
The future proudly greeting."

I wander'd forth at noon—alas!  
On earth's maternal bosom  
The scythe had left the withering grass  
And stretch'd the fading blossom.

And thus, I thought, with many a sigh,  
The hopes we fondly cherish,  
Like flowers which blossom but to die,  
Seem only born to perish.

Once more, at eve, abroad I stray'd,  
Through lonely hay-fields musing,  
While every breeze that round me play'd  
Rich fragrance was diffusing.

The perfum'd air, the hush of eve,  
To purer hopes appealing,  
O'er thoughts, perchance, too prone to grieve,  
Scatter'd the balm of healing.

For thus "the actions of the just,"  
When memory hath enshrin'd them,  
E'en from the dark and silent dust  
Their odour leave behind them.

BERNARD BARTON.

## FLOWER GARDEN.

THE *Delphiniums*, herbaceous *Phloxes*, and a host of other good things, will flower during the month, in addition to the ordinary bedding plants, which will now be at their best. There will be plenty of work in the flower garden during the month, for the summer bedders will want constant attention; and a considerable proportion of the spring flowering plants suitable for massing, must be propagated. The rose-beds must receive frequent attention, and all suckers be removed. The old flowering shoots should also be cut back, and the trees have a few good doses of liquid manure to aid in the production of a good autumn bloom. Budding must be proceeded with. If the stocks do not run freely, a thorough watering will generally start them. Evergreens may now be pruned, and their growth regulated. The annuals that are past their best should be cleared away, to prevent the garden having an untidy appearance. Where it is intended to save seed from any of the herbaceous plants, it is a good plan to cut the old flower-spikes directly the lower seed-pods begin to ripen, and stick them in pots filled with wet sand, and placed over a large sheet of paper indoors, to catch the seed. When left on the plants until the whole of the seed is ripe, three parts of it will be scattered to the winds and lost. Where it is intended to increase the stock of Pinks, Picotees, and Carnations, propagation must be commenced in the early part of the month, either by pipings or layers.

## KITCHEN GARDEN.

Tomatoes ought to be stopped just above the fruit, and be well pinched in. Continue to plant out all the winter stuff as fast as possible; the evening is the best time. Keep the Celery well watered, and plant out the main crop. Let every rod be removed from both Runners and Dwarf Beans directly they are large enough for gathering. Sow the main crop of Turnips, and successional supplies of Lettuce, Radish, Spinach, Small Salad, a few rows of early Peas, and a bed of Statholder Cauliflowers. The principal stock of Cauliflowers and French Beans in bearing will receive considerable help from a thick coat of short litter, or other mulching material, about the roots.

## FRUIT GARDEN.

Thin, stop, and train the young growth of wall-trees. Thin the fruit before it becomes too large. Proceed with layering Strawberry-runners, both for forcing and making new beds. Plants layered in pots, and, when well rooted, planted in properly prepared beds, will bear well next summer.

## GREENHOUSE AND CONSERVATORY.

All soft-wooded plants, growing freely, such as Petunias, Fuchsias, Zonale Pelargoniums, Browallias, &c., should be encouraged with liquid manure until they come into flower. Pelargoniums that have ripened their young wood nicely must be cut back to two or three eyes at once, and kept rather dry until the buds push. Hard-wooded plants that flowered late, and were kept indoors to finish their growth, should go out-of-doors now. Particular attention must be paid to plants standing out-of-doors. If allowed to suffer from drought at this season, next year's bloom will be impaired. Roses in pots should be plunged, to prevent the soil drying up quickly.

## VINERY.

Keep Muscats going with a little fire-heat in unfavourable weather. In the late houses, where the grapes are swelling, the laterals must be kept stopped; but where they are stoning, a considerable extension of laterals can be allowed. The earlier houses, from which the crop has been gathered, must be thrown open as wide as possible, and the laterals allowed to grow freely for a short time, to help to swell up the buds.

## STOVES.

The routine work of watering, air-giving, &c., must be well attended to. More air must be admitted, now that the greater part of the plants have made the season's growth, to insure its thorough maturation. Achimenes and Gloxinias will continue in flower much longer if helped with liquid manure. All subjects for winter decoration must receive every encouragement to have them strong by autumn.

## HORTICULTURAL AFFAIRS.

**R**OYAL HORTICULTURAL SOCIETY'S GREAT SUMMER SHOW, JUNE 7 AND 8.—This was the great exhibition of the year at South Kensington, and it is not too much to say that it was in every sense of the word a success. The display of fruit was not, perhaps, so large as it might have been, but in other respects the exhibition was remarkable for its completeness and the general excellency of the productions of which it consisted. Mr. Barron's arrangements were admirable, and the large tent presented a magnificent appearance. In the centre was one of the most interesting groups of miscellaneous plants that could be desired for such a position. These were contributed by Messrs. Veitch and Sons. One of the grass banks adjoining was adorned with a collection of pot roses from Mr. Charles Turner. These were certainly smaller than the plants from the same exhibitor presented at other exhibitions this season, but in colour, freshness, and finish they were perfect; and, indeed, we are inclined to the opinion that a finer lot has never been shown. They were not wanting in size; for example, there were eighty flowers in perfect condition on a plant of Miss Ingram, and over forty on one of Edouard Morren. At the other end of the tent was a fine group of hardy trees from Mr. Maurice Young; and close by grand groups of Dracænas from Mr. Bull and Mr. Wills. Two of the most interesting plants in the show were the two magnificent examples of *Odontoglossum vexillarium* from Baron Rothschild. One of these had produced from a single bulb thirty flowers, which were highly developed in respect of both size and colour; and the other, less highly coloured, had produced from two bulbs six spikes, bearing in the aggregate forty-two flowers. These were considered so good that a gold medal was awarded.

ROYAL AQUARIUM, WESTMINSTER.—The great summer exhibition held at this comparatively new place of public resort, was remarkable for the splendid display  
July.

of orchids, for which prizes of exceptional value were offered. Indeed the prizes were the largest ever offered in this country for these beautiful plants. In the class for twenty, open to amateurs, £50 was offered as the first prize, £30 as the second, and £20 as the third. The first of these prizes was awarded to Mr. T. Hubbersty, gardener to O. O. Wrigley, Esq., Bridge Hall, Bury, Lancashire, for a collection consisting of *Odontoglossum Phalenopsis*, *Saccolabium guttatum giganteum*, *Cattleya Mendelli*, *Thunia alba*, *Masdevallias Lindenii* and *M. Veitchii*, *Lælia purpurata*, *Aerides Fieldingii*, *Calanthe veratrifolia*, *Dendrobium lituiflorum*, *Vanda suavis*, *Masdevallia Harryana*, *Odontoglossum crispum*, *Anguloa Clowesii*, *Cypripedium caudatum*, *Dendrobium nobile*, *Cypripedium barbatum giganteum*, *Aerides Lobbi*, and *Anguloa uniflora superba*.

ALEXANDRA PALACE ROSE SHOW, to be held on Friday and Saturday, July 7 and 8, is likely to be one of the most successful of similar gatherings of the year. The schedule, which has been prepared by Mr. A. McKenzie, is remarkable for its comprehensiveness; the prizes are liberal, and, moreover, the dates have been fixed to suit exhibitors. Several of the rose shows announced to be held in June have had to be postponed or abandoned because of the lateness of the season; but at the time of holding the Alexandra Palace show, roses will be in perfection, and a grand display may in consequence be expected.

MR. J. T. PEACOCK, of Sudbury House, Hammersmith, has presented to the Royal Botanic Gardens, Regent's Park, a choice collection of agaves, aloes, cacti, and other succulent plants, which will remain as a permanent exhibition.

A PINK MARECHAL NIEL ROSE appears to have been secured by our able coadjutor, Mr. Thomas Trussler, of Edmonton, and should it be permanently fixed, it will add to the series of illustrations recorded of the reciprocal influence of stock and graft. A bud of John Hopper was entered on a brier in the usual way, and afterwards a bud of Maréchal Niel was entered on John Hopper. The result is apparently a pink Maréchal Niel.

PEACH NAIN AUBINEL is described in the *Revue Horticole* as an excellent variety for pot culture, being of small stature and compact growth. Fruit nearly spherical, attaining nearly three inches in diameter, often slightly unequal-sided. Flesh firm, free deep yellow, melting; juice abundant, and of a very agreeable flavour. It was raised by M. Aubinel, of Grenade, Upper Garonne, in 1863, and in English may be designated Aubinel's Dwarf Peach. It is said to come almost invariably true from seed, and it is spoken very highly of both as an ornamental plant and for its fruit.

AN INTERNATIONAL HORTICULTURAL EXHIBITION, to be held in London, has been formally considered by the Executive Committee of the Great Exhibition of 1866, and the conclusion arrived at is that "it is desirable to hold an International Exhibition and Botanical Congress in London in the year 1879, provided a suitable site can be found." A provisional committee has been formed for the purpose of carrying out the suggestion of the resolution.

THE LATE M. VAN HOUTTE.—The Belgian friends of this eminent horticulturist propose erecting a monument over his grave in the churchyard of Gendbrugge, as a mark of the esteem in which he was held. It is also proposed to promote a British memorial, and at a meeting of English horticulturists, held at South Kensington, to take the matter into consideration, it was resolved to open a subscription-list, for the purpose of founding a prize, to be called the "Van Houtte Prize," to be awarded at the quinquennial exhibitions at Ghent.

BLACKITH'S GARDEN STICKS AND TALLIES are so far superior to those usually sold, that we shall do good service to our readers by again directing special attention to them. The tallies are made in various sizes, and range in length from four to eighteen inches; and the sticks, which are remarkable for their strength and neatness, may be had in various lengths, ranging from one to two feet. We have used them for a long time past, and can heartily recommend them for their neatness, durability, and comparative low price. Particulars as to price, etc., may be obtained on application to Messrs. Blackith and Co., Cox's Quay, Lower Thames Street, E.C.

## JULY EXHIBITIONS.

- 1.—BROCKHAM HORTICULTURAL SOCIETY.—*Exhibition of Roses.*  
 1.—MARSDEN FLORAL SOCIETY.—*Annual Exhibition.*  
 5.—ROYAL HORTICULTURAL SOCIETY.—*Fruit and Floral Committees, 11 a.m.; Scientific Committee, 1 p.m.; General Meeting, 3 p.m.*  
 5.—ROYAL BOTANIC SOCIETY.—*Special Evening Fête, 8 p.m.*  
 5.—ROYAL CALEDONIAN SOCIETY.—*Summer Exhibition.*  
 5 AND 6.—ROYAL AQUARIUM, WESTMINSTER.—*Exhibition of Roses and Dinner-table Decorations.*  
 5 TO 8.—SOUTHPORT WINTER GARDENS.—*Horticultural Exhibition.*  
 6.—NEWARK HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 6 TO 10.—NOTTINGHAM ROSE SHOW AND HORTICULTURAL EXHIBITION.—*In the Arboretum.*  
 7.—GALLOWAY ROSE SHOW.—*In the Victoria Hall, Newton Stewart, Wigtonshire.*  
 7 AND 8.—ALEXANDRA PALACE, MUSWELL HILL.—*Great Rose Show.*  
 7 AND 8.—WELLINGBOROUGH HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 7 AND 8.—SANDOWN PARK CLUB.—*Horticultural Exhibition.*  
 7 AND 8.—THORNTON HEATH PUBLIC HALL.—*Horticultural Exhibition.*  
 11.—EALING, ACTON, AND HANWELL HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 11 AND 12.—TRURO HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 12.—PETERBOROUGH HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 12.—ENFIELD HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 12 AND 13.—WIMBLEDON HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 12 AND 13.—WEST OF SCOTLAND ROSARIANS' ASSOCIATION.—*Annual Exhibition, at Helensburgh.*  
 18.—LEEK ROSE SHOW.  
 18 AND 19.—KILMARNOCK HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 19.—TONBRIDGE HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 19 AND 20.—ROYAL HORTICULTURAL SOCIETY.—*Second Summer Exhibition, First Day, Fruit and Floral Committees, 11 a.m.; Scientific Committee, 1 p.m.; General Meeting, 3 p.m.*  
 20.—ASHURST COTTAGE GARDEN SOCIETY.—*Annual Exhibition.*  
 20.—NEWPORT HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 25.—WREXHAM HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 26 TO 28.—ABERDEEN HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 20.—BRIGHOUSE HORTICULTURAL SOCIETY.—*Annual Exhibition.*

## TO CORRESPONDENTS.

PROPAGATING TEA-SCENTED ROSES.—*J. H. W.*—The propagation of tea-scented roses by means of cuttings affords a ready means of increasing the stock of these varieties, and, with careful management, a large percentage of the cuttings will strike. Towards the end of July select moderately-stout shoots, and take them off about six inches from the base, and cut them up into lengths of four joints each. The soft points of the shoots should be rejected, because of their not striking so freely as the more mature portions. From each length of the stem remove the two lower leaves nearly close to the stems, but not close enough to injure the buds, and then insert them in pans of average depth. In the preparation of the pans, place, first of all, a layer of crocks in the bottom; cover with some loose material, and then fill to within an inch of the rim with light sandy soil. Over the surface spread a layer, three-quarters of an inch in thickness, of silver sand. The sand must be watered moderately, and made quite firm. Insert the cuttings to a sufficient depth

July.

to just leave the second bud from the base, and, with the aid of a small dibble, fix them firmly. They cannot be made too firm; but if they are at all loose, a large proportion will perish. As each pan is filled, water the cuttings liberally to settle the sand about them, and place in a frame. They must be shaded when necessary, and be sprinkled lightly once a day in dull weather, and in dry, hot weather, twice a day. The fullest information on the propagation of roses from cuttings ever published is given in *Hibberd's Rose Book*, published by Messrs. Groombridge and Sons, 5, Paternoster Row, E.C., at 6s., which also contains complete directions for the management of roses on their own roots.

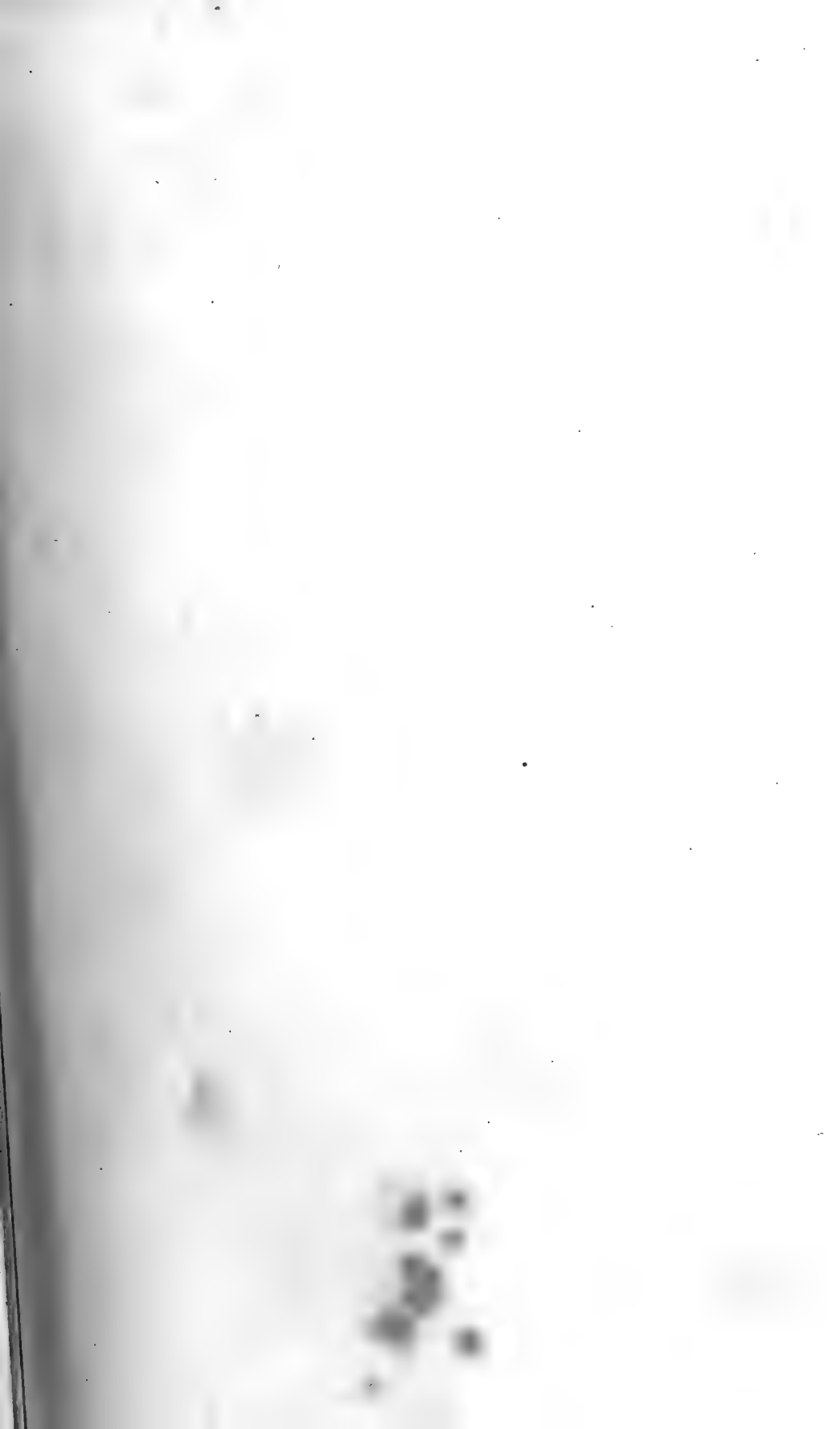
*J. H. W.*—The undermentioned thirty plants are well suited for planting in a dry and sunny border:—*Achillea ægyptiaca*, *Achillea millefolium rosea*, *Alyssum saxatile*, *Antirrhinum* in variety, *Arabis albidia*, *Aster discolor*, *Campanula glomerata*, *Campanula turbinata*, *Cerastium tomentosum*, *Eryngium maritanum*, *Iberis corrifolia*, *Iberis sempervirens*, *Iris germanica* in variety, *Lupinus polyphyllus* (the blue and white varieties are both good), *Potentillas* in variety, *Sedum fabarium*, *Vinca major*, and *Vinca major elegantissima*.

*EQUISETUM SYLVATICUM.*—*J. B. P., Wallington.*—You will, we have no doubt, be able to obtain plants of *Equisetum sylvaticum* from Mr. Sim, Foot's Cray, Kent. The plant is not generally grown in nurseries.

*DISEASED QUINCE TREE.*—*H.S., Puddletown.*—There is not, so far as we are aware, any effectual remedy for the disease from which the quince trees are suffering. Dusting the foliage with powdered lime may possibly be useful in checking the ravages of the disease. It is in a large measure due to unfavourable atmospheric conditions, and should the weather become more favourable to a healthy growth, it will probably disappear.

*GOOSEBERRY CATERPILLARS.*—*J. U.*—Gooseberry and currant trees that are badly infested with caterpillars can only be cleared of these pests with considerable perseverance and labour. Hand-picking is one of the most effectual remedies; but it is very unpleasant and tedious work to examine the trees thoroughly and remove the caterpillars by the hand. Dusting the leaves with hellebore powder when moistened with dew is effectual, provided it is applied in a manner that will insure its reaching the pests, which, owing to their being mostly on the under side of the leaves, is not an easy task. Syringing the trees with a decoction, prepared by boiling the leaves and stems of the common foxglove, *Digitalis purpurea*, in soft water for half-an-hour or so, can also be recommended to the attention of residents in districts in which the foxglove is plentiful. The leaves and stems should be about equal in quantity to the water in which they are boiled. The powder and decoction are both poisonous, and the fruit ought not to be gathered until sufficient time has elapsed for it to be thoroughly cleansed by the rains. Dusting lime and soot over the trees when the foliage is in a moist condition, will materially assist in checking the ravages of the caterpillars. One of the most effectual means of preventing injury to the trees is to examine them at intervals during the months of April, May, and June, and remove and burn all the leaves upon which the eggs are deposited. The caterpillars of *Nematus Ribesi* and *Phalæna vauaria* are the most destructive, and as the pupæ hybernate in the ground immediately underneath the trees, serious attacks may be prevented by adopting, during the winter months, measures for their destruction. Hoeing the surface rather deeply two or three times in the course of the winter, can be recommended; but it is better when the trees have been much infested the previous season, to remove the surface soil to a depth of three inches, and bury it in a deep trench. When hoeing the surface is depended upon for the destruction of the pupæ, it should, as far as practicable, be done just before a severe frost is expected.







## MESSRS. ROLLISON AND SON'S NEW ERICAS.

(With a Coloured Illustration.)



THE charming group of four new *Ericas* represented in the accompanying plate are varieties selected from the fine batch of novelties in this way, which the Messrs. Rollison and Son, of Tooting, have lately introduced into commerce. This famous establishment long ago hit upon a capital idea in connection with the cultivation of cape heaths, and it was no other than to produce varieties destitute of the gummy exudation by which for the most part these plants are distinguished. The perpetual multiplication and enlargement of towns, and the consequent increase of coal smoke, have altered considerably, within the past twenty-five years or so, the conditions of heath growing in this country. The sticky flowers hold every particle of soot that falls upon them, and hence, as smoke increases in the land, we more and more need a race of *ericas* destitute of the sticky varnish which, when perfectly clean, adds so much to the decorative beauty of these flowers. Now, it is very singular that although this gummy exudation, which in the country catches flies and in town catches soot, dust, and flies, is really not absolutely requisite to the varnishing of the flowers, because one of Messrs. Rollison's new varieties, *Shannoni glabra*, is absolutely destitute of stickiness, and yet is polished like ivory, and in the way of a cape heath there is nothing known that surpasses its pure, paper-white colour, which, however, may be changed to a delicate rosy hue by exposing the plant to light and air.

Our plate has been very carefully finished, and yet it conveys but a poor idea of the beauty of Messrs. Rollison's new varieties. No art of man can convey a fair idea of their softly-shaded tubular forms, their transparent colours, and their exquisitely delicate pencilling. We must beg our readers to take the will for the deed, for we certainly have endeavoured to produce a faithful picture, and where it fails is where any and every picture must fail, for never yet has there been a sufficient answer given to the question of the poet Thomson, "Who can paint like Nature?"

*Erica effusa* is not represented in the plate. It is a fine hybrid; the flowers are produced in large terminal whorls, they are of a bright scarlet crimson colour, with slightly reflexed primrose coloured segments.

*Erica opulenta* is represented in the centre of the plate on the left hand. The flowers are long and tubular, the colour a clear crimson lake, very different indeed from the dull red our printer is compelled to adopt, for in producing thousands of impressions at a low price colouring by hand is not to be thought of. Indeed, it is impossible to reproduce on paper the splendid colour of this charming variety.

*Erica ornata* is represented in the centre of the plate on the right hand, and the figure is satisfactory. The flowers are large, much inflated, and very smooth and delicately finished. The colour is deli-

cate rosy carmine at the base, white above, and with a very pleasing tint of green encircling the throat. This is a superb variety.

*Erica Shannoni glabra* is exactly represented in character by its name. It is a *Shannoni* in all its essential properties, and one of the most useful heaths in cultivation. It is represented at the foot of the accompanying plate, and it only needs to be added that while the representation is fairly faithful, this variety is especially conspicuous by the absence from it of the gummy exudation referred to above.

*Erica tricolor profusa* is represented at the top of the plate. It is very distinct, and exquisitely beautiful. The flowers are produced in large whorls; they are rather short and elegantly swollen; the colour rich rosy carmine at the base, shading to pale rose and to white towards the limb, which is encircled with delicate emerald green, the entire flower being of the most exquisite waxen texture.

It is quite a rare occurrence, in these days of meretricious ornament, to meet with such high class garden plants as these new *ericas*, and therefore we commend them to our readers with all possible emphasis.

## CHOICE STRAWBERRIES FOR SMALL GARDENS.

BY W. BRADBURY.



THIS may be aptly designated a strawberry year, for the fruit has been most abundant, and of large size, and splendid quality. In seasons when the strawberry crop is heavy, we often have heavy rains, which affect the flavour in a remarkable manner; but this year the weather was most favourable to the full development of the delicious flavour for which first-class strawberries are remarkable, and a most favourable opportunity has been presented for arriving at correct conclusions respecting the relative merits of varieties. The only fault that can be found with the season, so far as the strawberries are concerned, is that owing to the heat and drought, the runners do not grow fast enough. This drawback is felt rather severely by trade growers, because of the immense stocks of the several kinds that have to be produced to meet the large demand which prevails. But as by artificial watering the runners can be encouraged to grow freely, this drawback will not be felt so severely in private gardens, where there are a few beds only, as in nurseries of considerable extent.

Throughout the season of the ripening of the fruit, our large collection is constantly under attention for the purpose of determining the season and merits of the new kinds which are added as they make their appearance, and for ascertaining which of the older kinds are superseded by the newer sorts found to possess sterling merit. The result of this season's examination has been to show that several of the newer kinds are well entitled to a first place in a most limited collection; and for the information of those who prefer to grow a

few really first-rate kinds rather than a large collection, I have prepared a short list, comprising twelve of the very finest sorts we have. These are as follows :—

*British Queen*.—This grand old strawberry has been exceptionally good this season, and may be considered one of the best for those who can cultivate it generously ; but it is not suitable for general cultivation, as in some soils it will hardly live.

*Eleanor* (Myatt's).—A heavy-cropping variety, producing fruit large in size and of splendid colour ; very late.

*Frogmore late Pine*.—One of the very best of the late varieties ; the fruit is large, highly coloured, and of excellent flavour ; very productive, and late.

*James Veitch*.—A strong-growing variety, producing heavy crops ; the fruit large, globular, and of a fine deep crimson colour ; an excellent sort, but rather too brisk in flavour for most palates.

*Keen's Seedling*.—A fine old strawberry, specially adapted for furnishing early supplies ; one of the best for forcing, and well suited for those who do not like briskly-flavoured strawberries. Of its productiveness it is unnecessary to speak.

*Lucas*.—A variety deserving of extensive culture ; the fruit large, of splendid colour, and exceedingly rich in flavour ; very valuable for mid-season.

*President*.—One of the most valuable mid-season strawberries grown ; the fruit is large, handsome in appearance, and remarkable for its extreme solidity and rich flavour ; it cannot be too strongly recommended for main crops.

*Royalty*.—A strong grower, producing an abundance of fruit, of medium size, handsome in appearance, and of the most delicious flavour ; in the latter respect it is quite unsurpassed.

*Sir C. Napier*.—A first-class variety ; the fruit large, of bright colour, and high flavour ; very productive, and in every way valuable for main crops.

*Sir Joseph Paxton*.—An early, heavy-cropping strawberry, of the most delicious flavour ; the fruit is large, of a fine glossy colour, and extremely solid.

*Vicomtesse Héricart de Thury*.—A robust-growing variety, producing immense crops of handsome fruit rather above the medium size, and of splendid colour. One of the finest strawberries for preserving, but rather too briskly-flavoured for forcing.

To insure a crop of fruit from beds made up in the course of the forthcoming autumn, the runners should be at once layered in small pots, and regularly watered, to encourage the rapid production of roots. In the meanwhile the beds should be marked out, and after they have received a liberal dressing of manure, be dug over to a depth of about eighteen inches, unless it was trenched over in the course of last autumn or winter. The plants should be put out as soon as they are well rooted, and receive liberal supplies of water, to assist them to become established quickly. If the runners are layered in pots at once, planted as quickly as possible, and assisted with liberal supplies of water after the planting, they will bear abundantly next season.

August.

## THE DEATH'S-HEAD MOTH.

BY W. HANDYSIDE.



SEVERAL of the larger moths are known by the familiar name of "Death's-head," for the marks between the upper wings more or less resemble those on the moth properly so called, in which, indeed, these marks are so strikingly characteristic, that there is no good excuse to be found for a mistake at all. To know the true Death's-head, then, is an easy matter, but of course you must see it once, and once seeing should be enough to fix its identity on the mind, for it is a magnificent creature, and its peculiarity is individual after all, for although many moths are wrongly called Death's-heads, not one resembles the real thing which is as unique in its colouring as in its awe-inspiring "death's-head," that causes a creeping sensation in the whole nervous system of the superstitious.

The subject of this notice belongs to the great and grand family of hawk moths. Its scientific name is *Acherontia atropos*. It is the only one of its race that speaks, and it is especially noticeable as one of the very few lepidopterous insects that prey on the potato.

Those in search of the caterpillar should look first on the haulm of the potato, on the young herbage of the common and the deadly nightshade, the so-called tea-tree, *Lycium barbatum*, and the common jasmine, *Jasminum officinale*. On the last it rarely occurs, and on other plants it is by no means frequent, for, in fact, this, the most splendid, is also the most rare of the British lepidoptera.

The caterpillar is of great size, smooth, lemon-yellow, with seven violet stripes and many minute black dots. The horn above the tail is roughly bent down, but turned up at the tip. It is now "in season"—that is to say, it is in the month of August full grown, feeding freely, and if captured requires but little care to ensure a fine moth in due time. The season of the moth is October, but in a dry season it may be seen even at the very end of November.

The figure shows the perfect insect sufficiently well for practical purposes. One that I have before me, bred by me last year, has a much more terrible death's-head between its shoulders, for, in truth, the marks stand out in partial relief like a monkey's head stamped in velvet. The fore wings are rich brown, mottled, and banded, and having a pale dot in the middle; the hind wings are yellow, with two black bands. The body is rich orange, with six black bands across it, and a row of six large blue spots. It is a gorgeous monster, and worth many a search to become acquainted with it.

The chrysalis is of great size, reddish brown, smooth and glossy, and when found would by its massiveness suggest to the finder that it would be quite worth while to put it into a boxful of earth and wait for its final transformation.

The moth is very partial to honey, and is clever in finding its way into hives to suck the honey out of the cells. It may sound

extravagant, but I deliberately record my opinion that if this glorious creature were really abundant, bee-keeping would be impossible. It is a fact full of meaning for the Darwinites, and perhaps also for the lovers of honey.

As to the speaking powers of *Acherontia atropos*, its voice is sometimes a mere snap, or like a series of electric sparks; at other times it squeaks like a mouse, and sometimes its voice exactly resembles the horrid sound that occurs when a cork is cut with a knife that has been in the same parish as pickles, and has perhaps imbibed a suspicion of acidity. How the sound is produced nobody



DEATH'S-HEAD MOTH (*Acherontia atropos*).

knows, and the source of it is the more difficult to discover because the caterpillar, the chrysalis, and the moth are all equally vocal, though to a certainty it has no vocal organs proper, and must produce its cries by some such means as the cricket on the hearth. Kirby and Spence, Reaumur, Huber, and Roesel testify to the utterance of various sounds. Mr. Edward Newman speaks of having repeatedly "heard it" ("British Moths," p. 6), and adds, "We have also observed that the chrysalis squeaks when about to change to a moth; but the sound produced by the perfect insect is the most remarkable." The Rev. W. Houghton, in his charming "Sketches of British Insects," says he has on two or three occasions heard its peculiar squeak, "but could not make out how the sound was produced."

August.

The folk lore of the death's-head moth is, I suppose, outside the province of the FLORAL WORLD. If it were not, I would ask if there is any truth in the tradition that ever since the beheading of Charles I. this curious creature has been peculiarly plentiful in Whitehall. But, alas! when we touch this part of any subject we become involved in difficulties, and probably lose many a bit of useful knowledge through fear of accepting too freely the declarations of the superstitious.

## SPECIMEN HYDRANGEAS.

BY THOMAS NOTT,

Head Gardener, Wanstead Hall, Essex.



HYDRANGEAS were so well represented at the exhibition of horticultural productions recently held at Wanstead, that they constituted a most important feature. The collections were not only numerous, but they consisted of specimens so large in size and of so good a quality, that the judges, amongst whom were Mr. George Gordon and Mr. William Earley, were unanimous in declaring them to be the finest exhibited for many years past, and expressed themselves as being surprised by their excellency. If men of wide experience like those who officiated as judges at our exhibition were surprised by the examples staged upon this occasion, it is only reasonable to infer that few amateurs have seen at public exhibitions and elsewhere, really first-class specimens. It may also be taken for granted that a few particulars of the means by which they may be produced will be both interesting and useful to many readers of the FLORAL WORLD; and I have prepared a few notes descriptive of the course taken in the production of the specimens comprising the first prize collection, of which I was the exhibitor. I hope to be excused for not speaking of the specimens of which my collection existed, but as showing the high quality of examples contributed by the several exhibitors, I may, perhaps, be permitted to say that those forming the second prize collection are from three to four feet in diameter, and as densely furnished with bloom as the pelargoniums staged at the Metropolitan Exhibitions by Mr. James, Mr. Ward, and other first-class cultivators. They were, indeed, so well flowered that a small portion only of the foliage could be seen.

In the production of specimens of the dimensions and style of those here referred to, a period ranging from two to four years is necessary, for until the plants have attained a certain age and strength, they do not produce sufficient shoots to form a large specimen. I will not weary your readers by recapitulating the details of striking the cuttings, and so forth, because it is not so much my intention to deal with the A B C of the cultivation of these flowers as it is to assist cultivators who have some knowledge of them in finishing specimens in first-class style. The plants should have from eight to twelve good



flower-heads, and as only one flower-head, as is well-known, is produced upon each shoot, it will be readily understood that fully-developed examples cannot be produced in twelve or eighteen months. I would suggest that in the early part of the year—February or March, for example—a beginning be made with plants well established in five or six-inch pots. The first step will be to prune them back to the second or third joint from the base; and the next to shift them into eight-inch pots. A certain latitude is allowed in reference to pruning, and with a view to afford all the information possible, I will add that plants with stout stems should be cut back to the third joint, and those of less strength to the second joint. The same rule must be followed in pruning them in the second and subsequent years, excepting that the shoots of the previous season are operated upon instead of the main stem, as in the first instances. The pruning should also be done somewhat earlier in the seasons subsequent to the first, and the plants be placed in a frame, with protection from frost, until they are rooted. At each shift, pots two sizes larger than those previously occupied should be employed, and when they become too large for fifteen-inch pots, they must be destroyed, to make room for younger examples. When repotted, as here advised, no second shift in the same year is necessary; indeed, it is not desirable, for it is not good for the plants to be disturbed at the roots in the course of the growing season. The compost found to suit them best is prepared by the incorporation of two parts each of turfy loam and peat and a part each of leaf-mould and well-decayed manure. The drainage must be just sufficient to carry off the superfluous moisture, and the soil be pressed firm.


In the management of the plants remove weakly shoots from those likely to become overcrowded, so that the growth required for the formation of the specimen may have room enough for its full development. To have the wood well ripened by the autumn is also important, and to ensure the thorough maturation of the new growth, the plants should, as soon as the beauty of the flowers is past, be placed in a sunny position out-of-doors. It may also be well to remind readers that the young shoots should be tied out neatly at an early stage, to afford space for the development of the foliage without overcrowding. From the time of their commencing to make new growth in the spring, most abundant supplies of water are necessary, and when the shoots are four or five inches in length, supply them with clear water and liquid manure alternately. They must also be syringed overhead daily until they are coming into bloom. Indeed, an abundance of moisture is so essential that large specimens may be placed in pans of water when in full growth. The plants may be allowed to produce their flowers from the time of their being put into eight-inch pots until they attain to specimen size.

I have directed attention to the production of specimens of these fine old flowers because of the grand appearance they have in the conservatories, in balconies, and in suitable positions upon the terrace. They are especially useful to amateurs who have no glass

structures, because they can be grown very successfully out-of-doors during the spring, summer, and autumn, and may be wintered in a shed. But to have them in the highest possible perfection, the aid of a frame or greenhouse is necessary.

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### THE CULTIVATION OF THE ROSE.

T the first meeting of the Borough of Hackney Horticultural Society, Mr. Shirley Hibberd, in response to the invitation of the committee of management, delivered a lecture on "The Cultivation of the Rose," of which we herewith give an abstract. There was a large assemblage of members, and the chair was taken by J. Sanderson, Esq., for many years president of the Stoke Newington Chrysanthemum Society.

Mr. Hibberd commenced by observing that the rose fairly represented the whole of the plants of the rosaceous order in respect of growth, and requirements. Some rosaceous plants were trees, in the proper sense of the word, others were bushes, and a few, like the bramble and the raspberry, might be classed as biennial or annual bushes, for they renewed themselves from the root from year to year. The rose certainly might be grown as a tree or a bush; and it was a fact of no small importance that, although it did not produce rods of annual duration like the bramble and the raspberry, yet it tended always to renew itself from the root, and that was a point of very great importance in considering the proper cultivation of the rose. It agreed with the majority of plants of the same order in requiring a deep, strong soil, abundance of moisture, full exposure to light and air, and a climate strictly temperate, for rosaceous plants were scarce both in very hot and very cold climates. As in the course of a short address it was impossible to exhaust so large a subject, it would be better to discuss few than many points, and he would invite his hearers to permit him to base his observations on the fact that the rose tends always to renew itself from the roots. It might be regarded as a vegetable phoenix, and if that was too far away a figure, they might come nearer home, and say that, as a plant given to the production of suckers, it might be treated in much the same way as the raspberry, and in truth was so treated in cases where dwarf roses were systematically pegged down, because to grow them well in this way it was necessary to lay down a fresh lot of rods every year, and of course those that had flowered were cut away. Now, as regards the methods that prevail (said Mr. Hibberd), dwarf roses are grafted or budded on the Manetti or Italian brier, and standards are grafted or budded—and for the most part budded—on the English brier. In either case, the method of putting a rose on foster roots violated the first principle of philosophical rose-culture, for if we are to be advised by Nature, we should encourage and not thwart the natural tendency of the rose to renew itself from the root. We are now to put out of view the

fact that it is convenient for nurserymen to send out new roses budded on the Italian or the English brier; we are to consider the subject of rose-growing in a broader manner, and we must face the fact that the rose will always, if it can, throw up rods from the root, and sometimes these rise so far from the original centre, that we may really regard the rose as a travelling plant.

If we look around at the gardens in the suburbs of London, we cannot fail to observe that they all contain standard roses, and the standard roses are, almost without exception, half-starved, ugly things, that are a discredit to the garden and no use to anybody. It is always expected of them that they will become beautiful some day; but they never do become beautiful, and in very many cases they live only a year or two, and are systematically renewed, and the new lot is always expected to do better than the old lot, and never realizes the expectation. If it be asked why this should be, the answer appears to be close at hand. The brier requires a rich deep soil, and if any way treated as capable of enduring starvation, resents the insult, and dies outright. The close pruning usually adopted, however, is the principal cause of the failure of brier roses, for the growth is cut close in, and this checks the action of the root, and this results in general debility of both rose and stock, and in the hope of making all right at last the brier endeavours to renew itself at the root, and in carrying the endeavour into effect throws up a lot of suckers, and these are suppressed as fast as they appear. Thus restricted at top and restricted at bottom, systematically prevented acquiring a reasonable degree of vigour, the standard rose lives to look like a scarecrow or a bottle-brush, or makes an end of the conflict in the arms of death. Then another lot is required, and these go through the same melancholy process, and, strange to say, this process is dignified by being described as the cultivation of roses.

It will be asked, of course, if any remedy is available for this mismanagement of the queen of flowers? There are many remedies, and one at least consists in managing standards in a more rational way, as, for example, in feeding the root and encouraging the head, so that the whole thing, root and branch, shall have some degree of health and vigour. One way out of the difficulty is to plant own-root roses, which may be allowed to renew themselves at the root in accordance with the law of Nature; for however hard it may be upon the particular plants, we cannot allow suckers to rise from briars of any kind except in very extreme cases where briars are wanted, and named roses are considered a nuisance. It will be observed, that if smoke affects roses injuriously, the brier is in a deplorable fix when planted near a town where smoke prevails, because it is not allowed to renew its stem, and therefore the same stem must be poisoned by smoke year after year. On the other hand, own-root roses suffer no such perpetual poisoning, because they throw up fresh rods from time to time, and their old rods may be cut out as raspberry canes are; and thus, like the plane-tree, they may enjoy some degree of immunity from injury by smoke, in consequence of their capability of getting rid of their corroded bark

surfaces. The stem of the brier is not renewable while it carries a head that does not belong to it; but the own-root rose is all of a piece, and if smoke cannot harm it much, neither can frost, for its power of renewal at the root will pull it through all such difficulties.

Mr. Hibberd said he began to advocate the own-root system in 1858, when standards were in much higher favour than now, and own-root roses were scarcely known to amateurs as possibilities. For years the cause of own roots had to be argued in the face of a stubborn scepticism, and the trade, almost to a man, declared such things impossible. Now the case was changed, but there was still much to be done to convince the thousands whom they wished to see enjoying roses without any temptation to describe them as the greatest plague in life. To make own-root roses required more skill and patience than to enter buds on the Italian or English brier; but it is a very simple process of propagating, after all; for, in the autumn roses may be multiplied by cuttings in the fashion of currant-trees; in spring the new growth of forced roses may be struck in heat in precisely the same manner as bedding plants; in July cuttings may be struck by the aid of frames and hand-lights; and at the same season the best of all modes may be practised—that is, the striking of roses from eyes in the fashion of grape-vines. Nor must it be supposed that by growing own-root roses we are shut up to little ineffective plants a foot or so high. If allowed to grow, and encouraged to grow, these roses soon become great thrifty flowery bushes, producing myriads of noble flowers; and it is only when flowers are required for exhibition that severe pruning is required. And they differ from brier roses in this respect, that every sucker they make is a gain rather than a loss, a joy instead of a vexation. We might travel far and wide to see examples of such roses as he had in his mind; but they were to be seen. He could not forget how, in the course of his twenty years' advocacy of own-roots, the proposal had been relegated to the region of impossibilities, and the trade growers had declared the Manetti absolutely necessary in the public interest, and yet he had seen within the past few years, in one of the greatest nurseries, where the rose had always obtained special attention, 50,000 own-root roses all in a piece, all in flower, presenting such a luxurious wealth of colour as probably, in the case of roses, had never been seen before. Probably the charming spectacle might now be seen at Messrs. Lane and Son's nurseries at Berkhempestead, for it was there, three years ago, that he witnessed the first satisfactory evidence that the trade growers were becoming alive to the value of own-root roses.

If it be asked, what is to become of the exhibitor? he would answer that he at least may be encouraged to raise roses on the brier for the sake of maiden flowers for the show table; but it would be found that foster roots were not absolutely necessary for the production of exhibition roses. However, as he could not now discuss every point, he would say no more on the subject of growing roses for show, but he would return to the standards to advocate them in another way; for the rose makes a noble tree, and we

should enlarge rather than contract our range of selection of beautiful trees in the garden. Having abolished the bottle-brushes and the hard mop-headed standards, so-called, he would like to see in suitable positions standards with good heads on stout stems of such sorts as Blairi No. 2, Coupe d'Hébé, Paul Verdier, and the most vigorous teas and perpetuals, all of them to be treated on the principle, that as pruning the head checks the action of the root and hardens the bark of the brier, so the rich beauty of contour proper to ornamental trees could only be secured by encouraging the growth root and branch, such pruning as might be required to be most tenderly and cautiously performed. There was yet another class of tree roses that were admirably adapted for large places, and formed when skilfully handled the most sumptuous of lawn trees. These were standards of such as the Sempervirens and Ayrshire sections, which when well made might be likened to fountains, and one rule in the management of which was, that they should never be pruned at all. An amateur rosarian who had once become familiar with roses in this form would no longer tolerate the orthodox mop-headed things that were called standard roses—at all events, within every-day view of his windows—but would send them to the reserve ground to supply cut flowers, or plant them in the boundary fences to light up the green line here and there with a noble boss of flowers.

### CANTERBURY BELLS.



THE varieties of *Campanula media*, better known, perhaps, as the "Canterbury Bells," form such an exceedingly attractive class of plants, that a word or two in reference to them may not be out of place. Especially useful are they to those amateurs who have not over much accommodation for the cultivation of bedding plants, because a stock, whether large or small, can be raised without the aid of a single foot of glass. My object in penning this note is to direct special attention to the type known as *Campanula media calycanthema*. The flowers of the varieties comprising this type have a calyx of precisely the same colour as the flower itself, and in many cases of a similar shape. Indeed, in some instances the calyx bears so close a resemblance to the flower that it has the appearance of one flower being inserted in the other. All the flowers on the same plant are alike, and those having a calyx of the size and shape here referred to represented the purest strains. In some cases the coloured calyx is only one half the length of the flower, and in others it is split into four segments, and stands out at right angles to it, and although the flowers with these calyces do not represent so high a state of perfection, they are remarkably beautiful, and produce a glorious display in the borders. All three forms will, as a rule, be produced by plants produced from the same packet of seed. The plants are somewhat pyramidal, and branch freely, and clumps of three or four produce a huge mass of bloom ranging from three to four feet in diameter. The colours range from the purest white to deep blue, and comprise

August.

some exceedingly pleasing shades of pale blue. There are also several shades of rose, which also are extremely pleasing. In a private garden the best course is to plant them in clumps of three or four plants each in the second row of the mixed border, the clumps to be from four to six feet apart. When in bloom they are wonderfully effective, but they do not remain in bloom a sufficient length of time to justify their recommendation as bedding plants. Of their effectiveness in beds there can be no doubt, and in proof of this it may be well to mention the fact that a week or two since I saw in the seed grounds of Mr. Richard Dean, at Bedford, a bed containing at least a hundred plants, and anything more beautiful it would be difficult to imagine.

To raise a stock it is simply necessary to procure a packet of seed, sow in drills, and when the plants are of sufficient size to transfer them to the border. The size of the packet ordered must be determined by the number of plants required. The seed should be sown rather thinly in drills, so that the plants have sufficient space to attain a proper size for transplanting without becoming overcrowded; and to ensure the rapid germination of the seed, partly fill the drill with water previous to sowing. By the middle of September the plants will be large enough to plant out, and to afford them a chance of becoming thoroughly established by the winter the planting should not be delayed after the end of that month. There will be no difficulty in planting them at the period here mentioned, for the majority of the bedders will then have become exhausted, and if it is not convenient to clear the border, the stations to be occupied by the campanulas can be marked out, and a few plants removed from them. July is the best month in which to sow the seed, but if sown early in August, and the precaution mentioned above taken to prevent the seed lying dormant, the plants will be quite large enough to produce a satisfactory display of bloom in the summer following.

C. W.

## LADIES' TRESSES (SPIRANTHES AUTUMNALIS).

BY L. LANE CLARKE.



THE *Spiranthes autumnalis* is now abundant in dry pastures. It is thickly dotted on the Malvern hills, on the light pastures of the Isle of Wight, and the meadows and cliffs of the Channel Islands.

The spiral cluster of small white flowers is so insignificant in appearance, that more than once I have heard the exclamation of—*That an orchid?* " Even so—gather one, and come and see.

It will require a microscope to discern all its beauty; but a pocket lens will show us much, and we shall learn from this one specimen what it is quite necessary thoroughly to understand, before we can appreciate the discoveries of Darwin.

The flower spike (Fig. 1) is given natural size. The other figures are all more or less magnified.

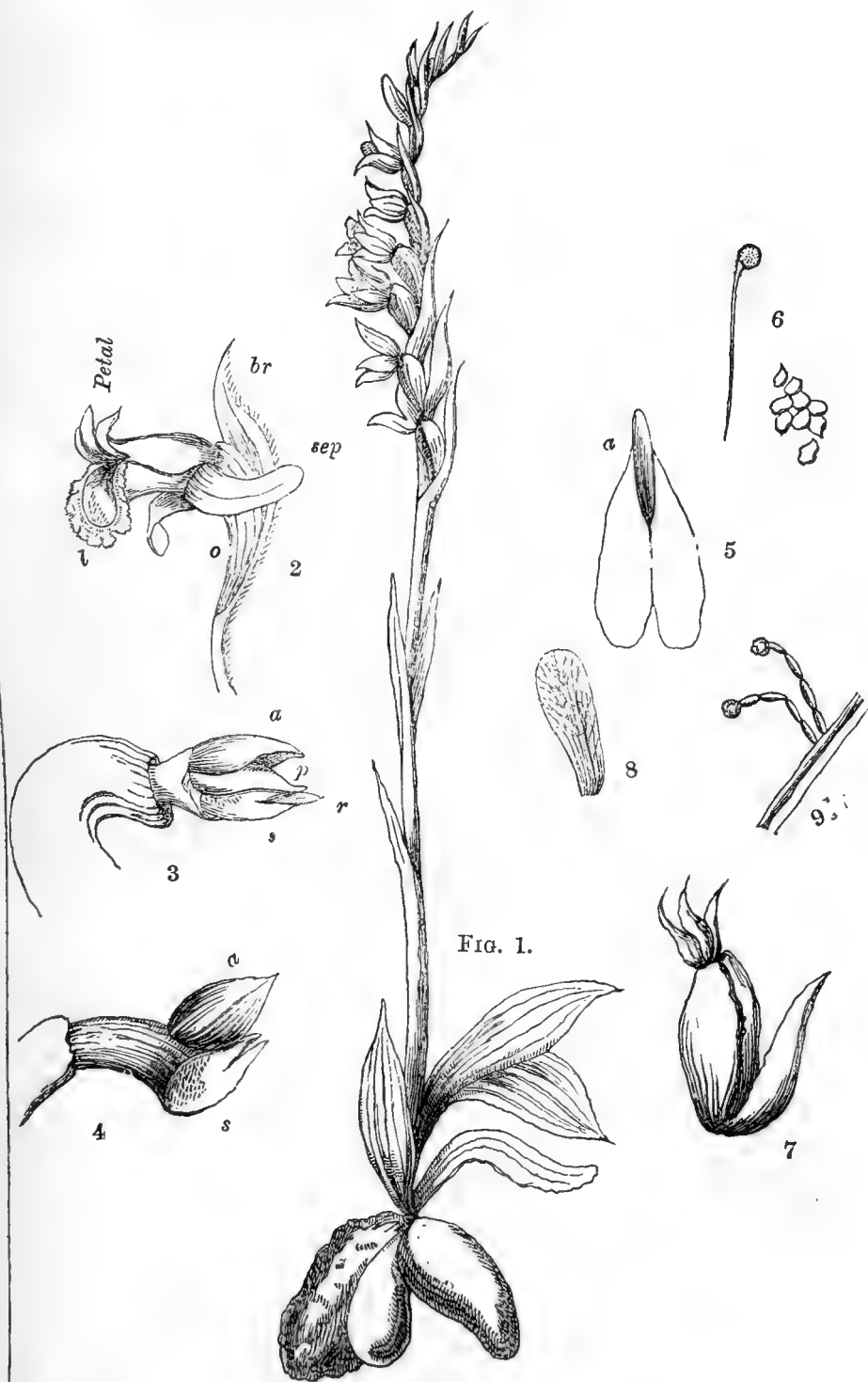


FIG. 1.

SPIRANTHES AUTUMNALS.

In the single flower (Fig. 2) we observe the plan upon which all orchids are fashioned, the number three ruling the plant, however modified by the Creator, "for whose pleasure they are and were created." Three sepals, three petals, three pistils, and twice three stamens. These are not discernible at first, because the large lower petal, or labellum, is so prominent, and two upper petals are joined together, and one of the sepals adhere to them so closely as to require particular attention.

Of the three pistils, one is modified into a rostellum or beak, *r*; the other two are confluent, and form a cup, the surface of which is the stigma. This stigmatic surface, *s*, like all other stigmas, becomes at a particular moment highly viscid, attracting and retaining the pollen grains, which throw their granular tubes down the loosened tissue, to fructify the ovules in the ovary beneath, *o*.

Six stamens, according to Lindley and Hooker, are discoverable in the perfect orchis; only one fertile anther is apparent in *Spiranthes*, which now demands close attention.

In examining a young *Neottia* with a pocket lens, and looking into the flower, we observe two pale yellow spots in the throat; these are the pollen masses or pollinia lying under the anther cell, *a*, and immediately over the stigma, *s*, attached to the rostellum, *r*, by a boat-shaped disk, in such a position as to render it highly improbable that the pollen grains of that flower can ever touch their own stigma. If a needle is passed into the flower, and this disk touched lightly, it will detach itself, and with it the whole pollinia, as in Fig. 5.

This, on being pressed between thin glass under the microscope, will show the square or oblong pollen grains (Fig. 6); or if applied to the stigmatic surface of an *older* flower, these bright golden grains will adhere to the glistening green cup, and be a beautiful object under a low power.

Some flowers, if stripped of sepals and petals, as in Fig. 4, will show the anther cell empty, the stigma untouched, the flower unfructified—where, then, is the pollinia?

This is Darwin's discovery, that *Spiranthes*, like so many of its brethren, is indebted to insect visitors for the perfection of its seed, depending also on the movement of its labellum, which at one period closes the throat, and protects the young stigma until its hour of maturity has arrived, then drops slowly down, opening its honey glands to invite the wandering bee, which bears upon its proboscis the pollinia previously extracted from a younger flower.

Resting on the sunny hills above Torquay, Darwin watched the intercourse between insect and flower. The little *Neottia* giving forth a sweet perfume to attract the living "winged things." He saw the humble bee, as I have seen the hovering *Syrphidæ* and *Tipulæ*, and small *Hymenoptera* enter the flower cup; but these only entered one flower, and then flew away, I know not whither. Whereas he saw the bee always alight at the bottom of the spike, and, climbing up regularly, withdraw the pollinia from the upper and youngest flower, then fly to a next plant, rest for a moment on



the labellum, which is moved aside, and whilst the insect sipped the nectar, the pollen mass was received by the expectant stigma. Then again mounting the spike, as the long and flexible proboscis was thrust into the scarcely opened flower, it could not fail to touch the sensitive rostellum, and bear away the disk and its pollinia.

The experiment is easily tried, and you will find that once fertilized, the stigma becomes dry, and will receive no more pollen. There is no waste in any of the works of God.

For more minute details of rostellum and disk, we must refer to Darwin's work, as the length of this paper is limited; but I wish to observe that a section of the ovary is well worth looking at, also the seeds, like pretty netted purses, which contain the germ of the future plant (Fig. 8). A portion of the cuticle, also, from any part of the stem or flower, will show jointed and glandular hairs, giving a crystallized appearance to the surface of these parts.

Fig. 7 is a mature ovary, with the withered sepals on its apex and the bract at its base.

## THE ROSE-BREADED COCKATOO.

BY THE PRISONER'S FRIEND.



IN passing through London lately, I was surprised to observe on a barrow in the public street a number of birds for sale, comprising species that I had always considered scarce and valuable. One of these was the rose-breasted cockatoo, which in this genus bears the specific name of *Roseo-capillus*, the rosy feathers of the breast being as fine as hairs, hence the designation. It is an exquisitely beautiful bird, with very short beak, a very close and scarcely conspicuous crest, which it raises when pleased or surprised, the prevailing colours of the plumage being light ashy grey and warm purplish rose. The birds I saw were offered at ten shillings each, and of course their beauty would sell them. It may be that some of your readers would like to know something about this pretty creature as a parlour pet.

The rose-breasted cockatoo is a ground bird, and when allowed full liberty will but seldom use its wings. It is well, therefore, to begin training it early to go out of its cage about the room, and to return to it of its own free will. It can be easily caught on the ground by means of a small cloth put over its shoulders, until it learns to go to its cage for food, and it very soon becomes so tame and familiar, that it will sit on the shoulder of its mistress, and be as well-behaved as any feathered pet that ever was known.

In all its ways it is extremely gentle; it is, in fact, the most gentle as well as most beautiful of the parrot tribe. It becomes so affectionate, and is so partial to human society, that it should be taken much notice of, and frequently be played with, or it is liable to mope and lose colour. Whatever of an untoward nature happens to this pretty creature at once affects its colour; hence, when the plumage is

perfect, we know that the bird is happy. It is decidedly delicate, being a native of the hotter parts of Australia, and so soon takes cold if unduly exposed, that one of the primary features of its treatment consists in keeping it as far as possible in a medium temperature, for extremes of heat and cold are injurious to it, and it should never be placed in a draught of cold air.

The best every-day food for this bird is canary-seed. It may have a few grains of hemp occasionally, as a treat, and as an aid in training, but there is nothing so good for regular use as canary. It will enjoy a few lettuce-leaves at any time, and a ripe filbert is always acceptable, provided the shell be just cracked, for to crack a nut is beyond the power of this bird; but it likes to get the kernel out of the shell, if partly broken for it.

This bird does not rank high in respect of talent. I have found it easy to teach them to say a few words in a whistling kind of voice, but to talk, in the proper sense of the word, is beyond their power. But they are given to tricks, and, if regularly played with, and never teased, they become very amusing. One that I have now, and that has been in my possession about twelve years, loves to gambol on the hearth-rug with a kitten, and when in a funny mood, and without a playfellow, will roll on its back and scream, and, indeed, may be rolled about with the hand as one would tumble a cat or dog playfully. Its favourite trick is to shake hands, and this it will do with a stranger, on being desired—indeed, I have seen a bird of this kind shake hands until it dropped from its perch from sheer fatigue, and even then held up a quivering foot for another friendly greeting.

The rose-breasted cockatoo is essentially a ladies' bird. Its natural gentleness renders it incapable of mischief or spite, and it is always delighted to see children, and will scream after them on only hearing their voice. It may be allowed to go about the house freely, provided there is no danger, for it is too weak and gentle to defend itself, and never has any inclination to use its wings. For life and jollity a grey parrot is certainly the best of its family, but for docility, beauty, and loveableness, the rose-breasted cockatoo must have the very first place.

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## NOTES ON NEW ORCHIDS.

BY WILLIAM GEDNEY,

Gardener to J. C. Day, Esq., Tottenham, N.



IN the FLORAL WORLD for May, 1875, I had the pleasure of directing attention to a few of the finest orchids adapted for general cultivation in collections of limited extent, and I now propose making a few comments on the most desirable of those of recent introduction. In the communication referred to, I was careful to mention those species and varieties only which were remarkable for their attrac-

tiveness, and could, moreover, be obtained at a cheap rate, as my object was to show amateurs that a very beautiful display could be had during the greater part of the year without incurring a heavy expense in the purchase of the plants. But on the present occasion I am desirous of assisting those who have collections more or less complete, and are anxious to be well posted up in reference to the merits of orchids that have been introduced to cultivation within the last few years. In speaking of orchidaceous plants, the term "new" is usually allowed to have a much wider signification than in speaking of soft-wooded plants, such as the pelargoniums, fuchsias, and so forth, because, owing to the impracticability of multiplying them at a rapid rate, some years necessarily elapse before they can be widely distributed. In several instances the introducers of new kinds have been fortunate enough to obtain sufficient stocks to enable them to offer plants at a comparatively cheap rate. For example, the lovely *Odontoglossum Roezli*, which may be considered one of the most valuable of recent introduction, can be obtained in thrifty little plants for a guinea or so, although it has only been in commerce two or three years. In years gone by, a very small plant of a really good orchid, when sent out for the first time, was considered reasonable if obtainable for a sum ranging between ten and twenty guineas, but now the most expensive of the new kinds may be had for five guineas. As an encouragement for cultivators to purchase those of recent introduction, attention may be directed to the fact, that owing to the slow rate at which they can be multiplied, orchids may be expected to increase in value in proportion as they increase in size. There is no risk, as in the purchase of other new plants, that a plant for which two or three guineas is paid will in two or three years be worth a few shillings only, and practically be unsaleable. In certain cases the importations may be so large, that the price of small plants are in a year or two reduced considerably; but, speaking in a general way, orchids steadily increase in value from the time of their being purchased, and can be always disposed of at a fair price, should there be at any time a desire to give up their cultivation.

In speaking of the new orchids, I shall not occupy space in discussing the merits of all that have been introduced, and instead shall give a brief description of those which are so good that they should have a place in the most select collection. First we have

*Cattleya gigas*, a very beautiful addition to one of the most attractive classes of orchids we have. It bears from seven to nine flowers on a single stem, each flower from five to six inches across. The sepals and petals are of a lovely shade of rose, and the labellum, which is two inches and a half across, is of a dark maroon purple, with wide blotches of yellow and white. It is impossible to speak too highly of this species.

*Cypripedium Argus* is evidently a Lady's Slipper, closely allied to the free-growing *Cypripedium barbatum*, although sufficiently distinct to be regarded as a species. It is of robust growth, and the flowers, which are borne on rather tall stalks, have whitish petals

veined with green and stained with purple, and spotted with blackish brown; the labellum or slipper purplish brown.

*Cypripedium Domini* is a beautiful hybrid between *C. caudatum* and *C. Pearcei*, and is intermediate in character between the two. The flowers are similar in colour to *Caudatum*, and the tail-like petals usually average eight inches. It is robust in habit, and produces its elegant flowers very freely.

*Cypripedium niveum* is not, strictly speaking, new, but it is so exquisitely beautiful and distinct in character, that it well deserves to be mentioned. It is of very dwarf growth, the foliage dark in colour, and the flowers, which are waxy in texture, are of the purest white, occasionally tinted and spotted with blush and violet. It is now so plentiful and cheap that it is within the reach of the humblest amateur.

*Cypripedium Sedeni* is a fine hybrid between *C. longifolium* and *C. Schlimmi*, and combines the free growth of the former with the exquisite colour of the latter, and may be considered a most welcome addition to the list of Lady's Slippers.

*Dendrobium crassinode Barberianum* is a beautiful form of this handsome dendrobe. The flowers are larger in size than those of the specific form; and the violet-purple spots at the tips of the sepals are much larger and more intense in colour. The centre of the labellum is a rich yellow. Altogether it is a desirable addition.

*Dendrobium Wardianum* may be regarded as one of the most valuable of all the dendrobes now in cultivation, for with a free growth it combines flowers of large size and exquisitely coloured. It is of pendulous habit, and the stems of vigorous, well-established specimens attain a length ranging from two to three feet, and bear from twenty to forty blooms. The flowers mostly measure three feet across, and remain a considerable time in perfection. The sepals and petals are white, with rich magenta-rose tips, and the labellum is rich orange with white margin, and having two blackish maroon blotches.

*Masdevallia Davisi* resembles, in some respects, the beautiful *M. Harryana*, and the brilliantly coloured *M. Veitchiana*, but it is perfectly distinct from them, inasmuch as it has narrow leaves, and flowers of a rich golden yellow. It is a most valuable addition to the important genus to which it belongs.

*Masdevallia Harryana* must not be considered new, for it has now been in commerce several years. The flowers are of rich violet-crimson, and freely produced. This fine species is figured at page 193 of the FLORAL WORLD for 1873, to which reference may be made for a descriptive list of the best species, and for particulars as for their cultivation.

*Masdevallia Lindeni* differs from the preceding in having flowers rather smaller in size and of a rich magenta colour. They both thrive in the cool house.

*Masdevallia Veitchiana* has large flowers of the most brilliant orange scarlet shaded with purple. It comes from a high elevation, and succeeds admirably in a cool house.

*Odontoglossum Roezli*, in my opinion, is one of the most useful of the Odontoglossums introduced of late years. It has elegant glossy leafage, and broadly expanded flowers, white, with a purple blotch at the base of the sepals, and a yellow blotch near the disc of the labellum. It is very free-flowering, and with a sufficient number of plants may be had in bloom throughout the year, as exemplified in our collection. There is a beautiful variety with pure white flowers.

*Odontoglossum vexillarium* is more attractive in colouring than the species immediately preceding it, but both are so distinct from each other that they may be considered indispensable to the most select collection. The flowers are large, the labellum fully three inches across, and the colour is a pleasing shade of rose pink. The plant is very free flowering, and examples consisting of two or three pseudo bulbs have been exhibited in London bearing from thirty to forty flowers. It has flowered most profusely in our collection, which includes a large number of plants of this superb species. The two Odontoglossums here mentioned require a higher temperature for their successful culture than *Odontoglossum Alexandræ*, and similar kinds. We grow them in the Cattleya house, in which a temperature ranging from sixty-five to seventy-five degrees is maintained during the summer, and from fifty to sixty-five degrees during the winter season, and a most satisfactory growth is the result.

## DRAWING-ROOM FERNERIES.

BY W. H. HALLIDAY.

(Communicated to the Massachusetts Horticultural Society.)



PLANT cases, as we know them, are classed under two heads. First, the Wardian case, in which are grown foliage plants, ferns, etc.; plants too large or too coarse to look well in a small case. Although the first Ward's case was only a bottle, in which by accident Mr. Ward discovered that plant life could be sustained, from some cause or other, we seem to have adopted the name Fernery for cases that are covered with a glass shade, in which only the more delicate or smaller varieties of ferns are cultivated. In this article I will endeavour to give some experience I have had with cases varying in size from four to fifteen inches in diameter.

The case may be made of tin, earthenware, or wood; it matters not which, so long as proper regard is had to drainage. This, as in Wardian cases, is of vital importance to the healthful growth of plants under the fern shade. I say this is of the *first importance*, as many persons who have the management of ferneries, use so little judgment in their care, that without a proper outlet for water, the soil soon becomes perfectly saturated. I have seen more plants destroyed in cases from the want of drainage and from over-watering than from any other cause. Most of the failures I have met with

have arisen from either too much water or too little light, and frequently both combined, although the persons having them in charge have strenuously denied that any more water had been used than the plants required, and have insisted that they were placed in a very light situation. The light situation is usually quite a dark one; generally a space between two windows, with a dead wall at the back of it, or in a corner, receiving a little light obliquely from a window two or three feet distant. When the plants are turned out, it is found that they have been treated as aquatics, and kept fairly up to their knees in mud and water. Then people wonder at their want of success.

The hanging fernery was my first attempt in this direction. I designed it to take the place of the hanging basket, which so seldom appears in good condition in the home. The case was turned from walnut, several pieces being glued and nailed together, to obtain the proper depth, and also to keep the wood from warping. It tapered to a point at the bottom, to give lightness to its appearance. A zinc pan, with a rim to receive the shade, fitted the case loosely enough to be readily removed when watering was necessary. This case, as first constructed, was covered with a shade eight inches in diameter and ten inches high, and was suspended by silvered copper wire. The case first exhibited before the Massachusetts Horticultural Society in June, 1871, had a shade twelve inches in diameter, and fourteen inches high; was elaborately turned from maple and walnut, ornamented with ebony trimmings, and filled with *Onychium japonicum*, *Adiantum assimile*, *A. cuneatum*, *Selaginella Willdenovii*, *Panicum variegatum*, *Fittonia Pearcei*, *F. argyroneura*, *Lycopodium denticulatum* var., and *Mitchella repens*, some lichens and wood mosses. It was awarded the society's silver medal.

This case, when taken from the hall, was suspended in my window, where it received the morning sun for about an hour each day, and was not disturbed again till January, excepting when it was occasionally turned to the light. It was then a mass of green. I noticed considerable soil on the glass, carried up by slugs in their nocturnal rambles; also some decayed fronds of the *Adiantum*. Altogether it was as much of a success as a close case could be, and would probably satisfy most people who grow plants for home decoration.

There are some plants that seem better suited to a close case than to any other situation. They are confined chiefly to the *Lycopods* and *Selaginellas*. Many of them are very beautiful, rivalling, and in some cases closely resembling, their allies, the ferns, in beauty of form, and delicate, feathery appearance. They make superb specimens grown singly under a shade, and I consider this the most satisfactory way to grow them, having the case large enough to fully develop their beauty of form and habit. Their growth is generally quite rapid, and to any one who delights in a well-grown plant, the culture is worth trial. *Selaginella Lyallii*, *S. africana*, *S. plumosa*, *S. umbrosa*, and *S. triangularis*, make quite large plants and are erect in habit. There are many others usually found in plant catalogues, and as far as I have tested them, all are eminently

fitted for close cases, and their growth is much more rapid than when grown outside. I usually combine them with ferns in the arrangement of a case, and think the effect is much better for the combination.

The *Fittonias* are another class of plants which are favourites with me. Their bright crimson and silver veinings are a great acquisition to the fernery, lighting it up wonderfully, and seemingly never out of place, no matter what the size of the case may be. They also make superb plants by themselves. I once had a plant of *F. gigantea* which filled a shade twelve inches in diameter and fourteen inches high. It was the finest plant of the kind I ever met with. Its habit became erect, and the colour of the foliage seemed very much more brilliant than we ordinarily find it. But the variety is too coarse to be grown satisfactorily with small ferns. *F. Pearcei* is the best for all purposes; being a vigorous grower, a mere scrap soon produces a good plant, and it will live under almost any treatment in a close case. Its habit is not so recumbent as when grown without. *F. argyryneura* is very beautiful; but it has one fault—that of damping off when it is chilled, thus spoiling it for winter use, unless in a very warm situation; but it is just the plant for summer use. There are so few plants of a white or silvery appearance suitable for this purpose that I use the *Fittonia argyryneura* as long as the foliage will hang together, and then replace it with something else.

A few weeks since, I had the good fortune to be shown a plant of *Todea superba*, growing in a Wardian case. The case was about two feet square, and as many feet high, with a flat top. A pan about eight inches in diameter, filled with this truly superb plant, in vigorous growth, occupied the centre. Other filmy ferns were planted out in the case, but this, the grand object of the whole, was elevated several inches above the others, showing conspicuously its full beauty. An English author says of it, "Delicate and fragile, with its semi-transparent fronds, it looks like tufts of the most beautiful sea-weed, plucked from the decorations of a mermaid's ocean home." I have seen larger plants of this species, but none in such fine condition. It was grown in a cool room, near a west window, the light partly obscured by a drawn shade. This plant is just the thing for a large fern shade, as it needs as little air as the *Selaginellas*, very little light, and a cool situation, and when once established, needs but little attention. The filmy ferns are eminently fitted for growing singly in cases by themselves. The only objection is the expense of many of them; but I would rather have one plant of *Todea superba* than dozens of ordinary ferns.

Generally too many and too large plants are crowded into the fernery, giving it a heavy and unsightly appearance, and filling the shade completely at the outset, without room for further growth. *Dracenas* and other plants of this kind make a fine display in the Wardian case, but are certainly out of place under a glass shade. I know it is very difficult even for those too who are not wanting in taste in other matters to understand this.

There are very few foliage plants that can be introduced into the



fernery. I would recommend only plants of dwarf habit, such as *Reineckea carnea* var., with grassy foliage, green and white; *Panicum variegatum*, a very pretty grass, with pink, white, and green foliage; and a small variety of *Bambusa Cyperus alternifolius* var. is quite pretty when a small plant; but the growth is almost too rapid for a fern case of ordinary size. The foliage is light and graceful, and contrasts prettily with ferns. It is a charming plant for a Wardian case.

Rockwork in a case of large size has a very pretty effect when well arranged. This is a difficult matter to accomplish, and I generally prefer the case filled with plants rather than rocks, though for variety I occasionally introduce them. I use coke and pumice-stone soaked in water, and sprinkled with cement to give colour. These substances are very light, and answer the purpose well. Quite small plants only are fit to be used with the rocks.

I have had a ventilated case filled with the following-named plants, and the effect was highly satisfactory:—*Nephrolepis exaltata*, *Adiantum colpodes*, *Onychium japonicum*, *Selaginella umbrosa*, *S. Wildenovii*, *Panicum variegatum*, *Lycopodium denticulatum* var.; near the glass *Pittonia Pearcei*, *F. argyroneura*, and *Peperomia maculosa*, and suspended in the shell a plant of *Selaginella cœsium*. This last is the prettiest basket plant I have ever used for summer decoration.

Among our native plants are many charming ferns that will soon accustom themselves to the confinement of the case. *Asplenium ebeneum* and *A. trichomanes* are very pretty ferns for rock-work; *Adiantum pedatum* is a lovely fern for a case, but requires rest in winter. *Polypodium vulgare* is pretty by contrast with those more delicate. There are several *Selaginellas* which will soon become quite at home in the fern case, and will be valuable acquisitions. *Equisetums* are pretty, and so different in their character and foliage from other plants, that one would hardly wish to be without them. Almost anywhere in the woods and swamps, beautiful and delicate plants may be found that will grace any fernery. Many gems are often discovered in this way. A favourite of mine is the *Mitchella repens*, or partridge berry vine, which takes readily to the close case, its bright red berries remaining perfect in their beauty for a long time. This plant always produces a wonderful effect, and there is nothing prettier for any case, no matter with what else it may be filled.

In the selection of a fern-case, I should choose one with an outlet for drainage. This, I have already said, is very essential, especially for a novice. If there is no drainage, water must be used very sparingly. Cocks and small pieces of charcoal, covered lightly with old moss to keep the soil from shifting down through, are the best for drainage. I prefer a case constructed of wood.

A fern-case for winter decoration ought to be filled in August, or not later than the first of September. This will give the plants time to become fairly established, and make new growth for the winter, before the short, cold days commence. Cases filled later in the autumn afford very little satisfaction or pleasure, as the plants



rarely get underway, or begin to make new growth until spring, if they do not wholly die out during the winter. Were I intending to fill a case for my own use I should certainly plant early.

For the close case, I should only use such plants as are suitable. Disturb the shade only when water is required, or signs of mould are visible, or the plants damp off; then give air for a short time each day, wiping out the glass when it is removed; this will generally remedy the trouble when practised a few times. When the plants are in vigorous growth, and during the warm weather, give considerable water, but withhold it almost entirely during the winter, and give plenty of light at all times.

## MESSRS. ROLLISON & SON'S NURSERIES, TOOTING.



E can very properly commence a notice of these fine old nurseries by saying that the proprietors publish the best catalogue extant of nursery stock in general, and whoever has a copy of the catalogue has a most useful horticultural *vade mecum*, adapted for reference, and especially valuable to those who have collections of plants of any kind, whether orchids, heaths, roses, or whatever else. This catalogue will show at a glance that it represents a large establishment, and one in which nursery stock of every kind is cultivated in a very extensive manner. For example, the edition now before us extends to 176 pages, and contains, on an average, the names and descriptions of fifty species or varieties on a page, the total number being 8,800 by this reckoning, so we may safely say that Messrs. Rollison cultivate about 10,000 species and varieties of garden plants. When we look through the catalogue we find that it ranges over stove plants, greenhouse plants, ferns, roses, fruit trees, herbaceous plants,—in fact, *everything*. The establishment has always been famous for orchids, heaths, ferns, and miscellaneous stove plants, but is more comprehensive now than in the days when Mr. Don made it famous by his pen, or even when the late Mr. Buckley entered on his labours there—labours well performed, and with a single eye to the interests of the firm by whom he was through life much respected, and is remembered in the right way since death made the firm in some degree chargeable with the care of his family.

In going through the place, the extent of the glass impresses one first, but the impression deepens as we note the value of the contents of the houses. There are not fewer than 1300 species and varieties of orchids grown here, and we see houses filled with such splendid things as *Dendrobium Falconeri*, *D. Dalhousianum*, *D. Dayanum*, *D. crystallinum*, and *D. Pierardi*. But if we begin to mention select orchids, we shall never have done, so we prefer to say that palms have an equal degree of attention here, and there is a splendid collection of the sorts best adapted for small plant-houses, and for table decoration. There is no class of plants in cultivation that has more rapidly risen in public favour, or become more important within the past few years as nursery stock, than these. In looking over Messrs. Rollison's immense collection, we noted the following as particularly well adapted for amateurs who require but a few of the most elegant and easily managed:—*Areca Baueri*, *A. sapida*, *Brahea dulcis*, *Calamus Verschaffelti*, *Chamedorea Ernesti Augusta*, *Chamarops excelsa*, *C. Fortunei*, *C. humilis* (the three hardiest of all), *Cocos Weddelliana*, *Corypha australis*, *Dæmonorops plumosus*, *Euterpe edulis*, *Jubæa spectabilis*, *Kentia Fosteriana*, *Latania Borbonica*, *Pritchardia filifera*, *Martinezia Lindeniana*, *Oreodoxa regia*, *Rhapis flabelliformis*, *Thrinax elegantissima*, *Welfia regia*.

In the way of ferns, this is most truly a "fern paradise," and one of the features will quickly attract a visitor specially in love with these plants, and it is the way in which filmy ferns are grown here. They are planted in large cases, which stand in the centre of a warm fern-house, and form a kind of frontispiece to it on

entering. These cases are built up with rockwork, containing a considerable bulk of very sandy peat and broken stone, and the roots of the filmy ferns are fixed on the rock by means of pebbles and pegs, and they soon take hold and root freely into the stony soil, and clothe the rockwork with the most delicious deep green growth imaginable. After the first start they have very little attention, for they do not often need either water or air, though they do certainly require plenty of atmospheric humidity, which is in part secured by keeping them close, so as to reduce evaporation to the least possible. An immense number of rare ferns will be found here in the finest condition. Here is the scarce *Hymenodium crinitum*, the lovely *Lepidopteris plumosa*, the delicate *Fœea spicata*, *Hymenophyllum demissum*, *Trichomanes fimbriatum*, etc. Indeed, we noted about sixty different sorts of filmy ferns in all, and of tree ferns not less than fifty sorts certainly, the *Dicksonias* and *Alsophilas* being of course the most conspicuous.

Turning about in the open ground, we are charmed with the plantations of roses, the collection of hardy herbaceous plants, the hardy trees and shrubs, and the strawberries. There is a fine piece of water on the property, wherein we see numbers of the rarer water plants, not in groups of two or three, but in great sheets, that it would be scarcely an exaggeration to speak of as we heard some one say, "there are acres of them." The roses have been as grand here as in most other places, the soil suiting them admirably. But after all, the great feature of the Tooting Nurseries, is the collection of heaths and hard-wooded plants generally. All the ericas here are in splendid health, and it is a fact of very great importance that these delicately constituted plants thrive as well near London as far away in the country. This is at once a curious and interesting circumstance, accounted for, perhaps, in some degree, by the fact that the best soil for the purpose is obtainable near London; for, indeed, the Surrey peat is sent hundreds of miles by railway for heath-growing, because there is nothing in the British Isles to equal it for the purpose. Whatever be the explanation, it is at all events the fact that, while Messrs. Rollison have one of the most complete and extensive collections of ericas ever formed, they have also the healthiest plants ever seen, and their steadfastness to first-class plant-growing ought to bring about a revival of the higher tastes that prevailed half a century ago, when this house had fewer competitors, and plant-growing was in higher favour than now.

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*PAPAYER UMBROSUM*, introduced from the region of the Caspian by Mr. W. Thompson, of Ipswich, is a very showy poppy, which will probably be found an acquisition to our flower gardens. It is, no doubt, closely related to *Papaver Rhœas*, of which it has the habit, but it differs somewhat in the leaves, and also in the very deep crimson of the flowers, the petals of which have a black spot near their centre which adds much to the richness of their colouring. Mr. Thompson states that it seems to need sowing in autumn.

THE ISLAND OF RUGEN, in the Baltic Sea, like many other small islands separated only by a very short distance from the nearest mainland, presents many interesting facts in its flora. The holly, according to the "Monatschrift," occurs in a wild state there, as well as the box. Some of the finer examples of the former are nearly twenty feet high, and very handsome in growth. The most easterly station for this tree in North Germany is in the Greifswald-œ. Schübeler, in his "Pflanzengeographischen Karte über das Königreich Norwegen," gives the northern limit of the holly as 63° 7' in 25° 23' E. longitude, near Christiansund; and near Bergen there is a fine cultivated specimen upwards of forty-five feet high, with a trunk about thirty-three inches in diameter.

*BOSSIA LINOPHYLLA*, which has recently bloomed in the botanic gardens at Kew, is well deserving the attention of cultivators of greenhouse plants grown for their flowers, as it has every appearance of being suitable for specimen culture. It is of elegant growth, the branches being slender and pendulous, and attractive in colour, for the pretty pea-shaped flowers are of a rich orange, and produced in great profusion. It appears to have been introduced from Australia rather more than seventy years since.

## THE GARDEN GUIDE FOR AUGUST.

The fulness of Thy presence who can see,  
 Man cannot live, great God ! and look on Thee ;  
 Around Thy form eternal lightnings glow.—  
 Thy voice appals the shudd'ring world below.  
 Oh ! Egypt felt Thee, when by signs unscar'd,  
 To mock Thy might the rebel monarch dared :  
 Thou look'st—and oceans sever'd at the glance !  
 Undaunted, still the charioteers advance ;  
 Thou look'st again—she clasp'd her howling waves,  
 And roar'd in stormy triumph o'er their graves !  
 On Sinai's mountain, when Thy glory came  
 In rolls of thunder, and in clouds of flame ;  
 There, while volcanic smoke Thy throne o'ercastr,  
 And the mount shrunk beneath the trumpet blast,  
 How did Thy presence smite all Israel's eye !  
 How dreadful were the gleams of Deity !  
 There is a voiceless eloquence in earth,  
 Telling of Him who gave her wonders birth ;  
 And long may I remain the adoring child  
 Of nature's majesty, sublime or wild ;  
 Hill, flood, and forest, mountain, rock, and sea,  
 All take their terrors and their charms from Thee ;  
 From Thee, whose hidden but supreme control  
 Moves through the world, a universal soul.  
 But who could trace Thine unrestricted course,  
 Though fancy follow'd with immortal force !  
 There's not a blossom fondled by the breeze,  
 There's not a fruit that beautifies the trees,  
 There's not a particle in sea or air,  
 But nature owns Thy plastic influence there !  
 With fearful gaze, still be it mine to see  
 How all is filled and verified by Thee ;  
 Upon Thy mirror, earth's majestic view,  
 To paint Thy presence, and to feel it too.

ROBERT MONTGOMERY.

## FLOWER GARDEN.

THE bedding plants will constitute the chief attraction of the flower garden during the month, although a number of the hardy plants will be in perfection. Chief among the latter are the *Gladioli*, *Campanula pyramidalis*, *Phloxes*, *Pentstemons*, and *Hollyhocks*. Tall-growing subjects should be staked as required, to prevent the flowering shoots being torn off by the wind. Remove the flower-spikes from all perennials immediately the beauty of the flowers is past, if the seed is not required. This is a capital time for sowing seed of these things. Sow in little beds on a shady border, and plant out directly the plants are strong enough to handle.

## KITCHEN GARDEN.

The principal spring crops must be sown this month, and it is highly important that everything in connection with them be done at the right time. If any delay takes place, the plants will not attain their full size ; and, on the other hand, if sown too soon, they become too big, and run to seed directly we get a few warm days in the spring. Sow Cabbage and Endive in the early part of the month, and Lettuce and Cauliflowers about the 20th. At the same time, sow Tripoli Onion, White Stone Turnip, and Black Spanish Radish. In earthing up Celery, be careful to prevent the soil finding its way to the hearts. As the celery makes but little progress after it is earthed-up, that operation ought not to be performed until after it is nearly full-grown. Take up and store Garlic and Shalots as they complete their growth.

## FRUIT GARDEN.

Regulate and train the growth of wall and espalier trees, so that it has free exposure to the light and air, to enable it to get thoroughly ripened. Protect Morello Cherries, and other fruit to be preserved on the trees after being ripe, with nets, or the blackbirds and thrushes will soon make short work of them. Make new Strawberry plantations as quickly as possible ; and if good strong runners are

August.

planted, they will form strong crowns this autumn, and bear a good crop next season.

#### GREENHOUSE AND CONSERVATORY.

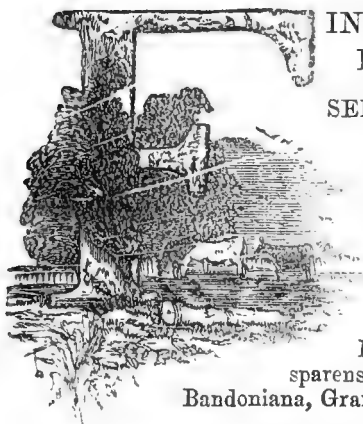
These structures must have a thorough cleansing at once, so as to be in readiness for the reception of the hard-wooded stock when required. All the wood-work should have a thorough scrubbing with soft-soap and warm water, and the walls be washed over with hot lime. All painting ought to be finished at once, so as to allow plenty of time for the effluvium arising from it to evaporate before the plants are housed. There is no danger of frost yet, but if we have much wet weather during the month, choice, delicate-rooted plants, like *Leschenaultias*, *Heaths*, *Genetyllis*, etc., must be removed indoors, to have protection from the wet, or they will suffer considerable injury. After they are indoors, the ventilators must be thrown open as wide as possible, day and night. Pot off cuttings of hard-wooded plants that are nicely rooted, to give them an opportunity of becoming nicely established before winter. Attend to plants out-of-doors, and see that they do not suffer for the want of water. Thin out the growing shoots of the climbers, to give the wood intended for next year a chance to get thoroughly ripened.

#### VINERY.

Vines swelling their fruit must have a moist, growing atmosphere. Muscats must have a temperature five degrees higher than that required for the Hambro's. Give plenty of air to houses in which the crops are ripe, but nail coarse canvas over all the openings, to keep the flies and wasps out.

#### STOVES.

Still maintain a brisk temperature, and give plenty of air, and use less shade than hitherto, to insure the wood being thoroughly ripened. Shut up early in the afternoon. Encourage winter-flowering plants with weak liquid manure, and give less water to plants that have completed their growth. A large proportion of the Orchids will have completed their growth for this season, and will now require more air and a fuller exposure to the light.



### IRON-POST FOR PURCHASERS OF PLANTS, FLOWERS, SEEDS, ETC.

#### SELECT ERICAS ARRANGED ACCORDING TO THEIR SEASON OF FLOWERING.

##### ERICAS FLOWERING IN JANUARY.

*Colorans*, *Sebana luteus*, *Regerminans*, *Caffra*, *Vernix*, *Vernix coccinea*, *Vestita purpurea*, *Decora*, *Exsurgens*, *Lambertiana*, *Mammosa*, *Mutabilis*.

##### ERICAS FLOWERING IN FEBRUARY.

*Bicolor*, *Coccinea*, *Exsurgens grandiflora*, *Transparens blanda*, *Elegans*, *Physodes*, *Gracilis*, *Assurgens*, *Bandoniana*, *Grandinosa*, *Triumphans*, *Cavendishiana*.

##### ERICAS FLOWERING IN MARCH.

*Persoluta alba*, *Aristata major*, *Aristata vittata*, *Atrorubens*, *Blandfordiana*, *Cerinthoides major*, *Cerinthoides nana*, *Purpurea*, *Trossula rubra*, *Vestita incarnata*, *Vestita carnea*, *Vestita rosea*, *Walkeriana*, *Vernalis*.

##### ERICAS FLOWERING IN APRIL.

*Banksiana*, *Cliffordiana*, *Halfordiana*, *Nivea*, *Persoluta*, *Perspicua nana*, *Racemosa*, *Profusa*, *Smithiana*, *Campanulata*, *Trossula*, *Hybrida*, *Obbata*, *Patersoniana*, *Expansa*.

## ERICAS FLOWERING IN MAY.

*Cinerascens*, *Lawsoni*, *Viridis purpurea*, *Dumosa*, *Ferruginea*, *Longiflora*, *Primuloides*, *Refulgens*, *Tubiflora*, *Turgida*, *Ardens*, *Floribunda*, *Celsiana*, *Vestita elegans*, *Vestita fulgida*, *Vestita lutea*, *Calycina capitata*, *Perspicua*.

## ERICAS FLOWERING IN JUNE.

*Aitoniana rosea*, *Ampullacea elegans*, *Aristata superba*, *Candolleana*, *Devoniana Effusa*, *Eximea*, *Favoides elegans*, *Hendersoni*, *Jacksoni pallida*, *Massoni major*, *Obbata purpurea*, *Opulenta*, *Parmentieriana*, *Rutilans*, *Tortiliflora*, *Tricolor*, *Tricolor elegans*, *Tricolor Kingscottiana*, *Tricolor superba*, *Tricolor Wilsoni*, *Ventricosa Bothwelliana*, *Ventricosa coccinea minor*, *Ventricosa magnifica*, *Victoria*, *Webbiana*.

## ERICAS FLOWERING IN JULY.

*Aitoniana rosea*, *Ampullacea rubra*, *Aristella*, *Bousteadiana*, *Burnetti*, *Clowesiana*, *Depressa multiflora*, *Eweriana*, *Exquisita*, *Ferruginea superba*, *Florida*, *Gemmaefera*, *Inflata rubra*, *Jasminiflora alba*, *Maidstoniensis*, *Metulaeflora superba*, *Obbata*, *Ornata*, *Parmentieriana rosea*, *Pulcherrima*, *Savillei*, *Tricolor coronata*, *Tricolor flammea*, *Tricolor impressa*, *Tricolor major*, *Tricolor Wilsoni elegans*, *Ventricosa grandiflora*, *Ventricosa magnifica*, *Ventricosa tricolor*.

## ERICAS FLOWERING IN AUGUST.

*Aitoniana*, *Ampullacea*, *Bowieana*, *Comosa alba*, *Cubica minor*, *Eximea superba*, *Inflata alba*, *Insignis*, *Juliana*, *Linnaeoides superba*, *Nietneriana*, *Paxtoni*, *Pulverulenta*, *Shannoni glabra*, *Taxifolia major*, *Tricolor Holfordi*, *Tricolor profusa*, *Tricolor Rollisoni*, *Tricolor superba*, *Tricolor Wilsoni superba*, *Venosa*.

## ERICAS FLOWERING IN SEPTEMBER.

*Aitoniana Turnbuli*, *Alopecuroides*, *Amabilis floribunda*, *Ampullacea obbata Austiniana*, *Bandoniana*, *Imbricata*, *Incarnata*, *Juliana rubra*, *Lindleyana*, *Metulaeflora*, *Retorta major*, *Splendens*, *Turnbuli*.

## ERICAS FLOWERING IN OCTOBER.

*Pinea discolor*, *Pinea favoides*, *Pedunculata*, *Retorta*, *Tenuiflora alba*, *Hartnelli*, *Ovata vestita coccinea*, *Cupressina*, *Cerinthoides*, *Lutea*.

## ERICAS FLOWERING IN NOVEMBER.

*Gracilis autumnalis*, *Sebana*, *Rubens*, *Viridiflora*, *Verticillata*, *Cruenta*, *Aspera*, *Florida campanulata*, *Caffra*, *Syndriana*, *McNabbiana*, *Lambertiana*.

## ERICAS FLOWERING IN DECEMBER.

*Formosa Solandriana*, *Wescotti*, *Wilmoresana*, *Concinna*, *Jacksoni*, *Versicolor*, *Præstans*, *Ignescens*, *Recurvata*, *Reflexa*.

\* \* The finest of the *Ericas* are those flowering during May, June, July, and August.

## HORTICULTURAL AFFAIRS.



ROSE SHOWS have, during the past month, occupied a large share of attention, for they have exceeded in number those of any previous year, and in extent and the high quality of the blooms brought together they have been quite unsurpassed. In addition to the great exhibitions of roses in and near the metropolis, most successful gatherings have been held at Oxford, Nottingham, Hereford, Reigate, Maidstone, Frome, and other provincial towns, and in every case the competition has been most severe, and the roses staged have been of unsurpassed excellency.

CRYSTAL PALACE ROSE SHOW, June 30 and July 1, was one of the most successful of the numerous exhibitions of cut roses that have been held in the palace of crystal at Sydenham. It was alike remarkable for its extent and the high quality of the flowers, and also for the splendid display of decorated dinner tables. Amongst the most successful, the trade exhibitors were Mr. Cant, Mr. C. Turner, and Messrs.

August.

Paul and Son; and the chief prize-takers in the amateur classes were Mr. Baker, of Heavitree, and Mr. George Rushmore, Tendring Hall, Colchester.

THE ALEXANDRA PALACE ROSE SHOW, on July 6 and 7, was unquestionably the best of the season, the date being just right for the flowers and the competition spirited. The great hall has lost its pre-eminence as the place for exhibitions, and the concert-room, where this show was held, answers the purpose much better, being less gaily coloured, and admitting of more compact arrangements. When the crowd came in to enjoy the feast of roses, the spectacle they encountered was one of extreme beauty, the fine long tables being well filled with cut flowers, and these in combination with the collections of pot roses, produced a surprisingly rich effect. Trade and amateur exhibitors appeared in about equal force, and the quality of the roses throughout was above the average, as in most other instances they have been this season. It was interesting to observe how the flowers corresponded in character with the several districts that produced them; for while Messrs. Paul and Son, of Cheshunt, with heavy-soil flowers, took the lead in the great trade class for seventy-two, Mr. Keynes, who had an extra in this class, put up the prettiest lot of flowers that were shown in it, and yet was thrown out in the judging because his light-soil flowers were wanting in substance. Mr. Cant, of Colchester, and Mr. Turner, of Slough, were also strong, both representing strong land, which this season produces the finest roses. Those who have watched the winnings at rose shows during the eighteen years that have passed since the foundation of the "National" will be able to call to mind how the cold wet seasons have given the light lands the lead, and the hot dry seasons have been especially favourable to the heavy lands.

NOTTINGHAM AND MIDLAND COUNTIES HORTICULTURAL EXHIBITION, from July 6 to 10, which was held under the direction of the municipal authorities of Nottingham, was on the whole a manifest improvement upon that held last year, and may be considered one of the most important of the provincial exhibitions of the year. There was a most excellent display of flowering and fine foliage, stove, and greenhouse plants. British ferns were contributed in magnificent condition and in sufficient numbers to fill a large tent. Exotic ferns were well represented, and roses, which had no less than fourteen classes provided for them, formed a large and most attractive feature of the exhibition. The fruit was not, perhaps, quite so plentiful as at the previous exhibition, but every dish staged was of splendid quality and most creditable to the exhibitors. Vegetables also evinced a slight falling off, but this may in a large measure be attributed to the lateness of the season. The exhibition was again held in the Arboretum, which is exceedingly well suited for exhibitions of this kind, and the plants and cut flowers, instead of being arranged in one monster tent, as was the case last year, were tastefully disposed in six or seven tents of medium size. That the exhibition was by no means of a limited character may be gathered from the fact that the six or seven tents under which the principal productions were staged were about 200 feet in length, and of a proportionate width, and in addition a large marquee was provided for the fruit and the decorated dinner tables.

THE EVENING FETE OF THE ROYAL BOTANIC SOCIETY, held on July 5, was fairly successful, inasmuch as it brought together some 5000 or 6000 visitors, who paid a high fee for admission. There was an exhibition of dinner table decorations in connection with the fête; but the chief attraction was the illumination of the gardens with lamps and coloured fires.

THE PORTRAIT OF THE LATE MR. STANDISH, the cost of which has been defrayed by subscription, has been made over to the trustees of the Lindley Library, and is now suspended in the council-room of the Royal Horticultural Society at South Kensington.

AZALEA INDICA IMBRICATA, recently exhibited in London, is a valuable addition to the list of varieties with double flowers. The flowers are pure white, occasionally flaked with carmine, and perfectly double. It will probably prove of exceptional value for furnishing flowers for cutting and for decorative purposes generally.

THE LONDON PARKS, in which bedding displays are made, are now in splendid condition in respect to promenade colouring. Country horticulturists, amateur and professional, who are desirous of making notes of bedding effects, may now find agreeable occupation in London. It may be well also to remind Londoners

that they have immediately within their reach many magnificent out-door floral displays that are now at their very best.

THE COUNCIL OF THE ROYAL CALEDONIAN SOCIETY have resolved to award the Neill Prize every second year instead of every third year, as in the past, and the prize for the period commencing with May 15, 1874, and ending with May 15, 1876, has been awarded to Isaac Anderson Henry, Esq., in recognition of his valuable labours in connection with botany and horticulture.

LATHYRUS DRUMMONDII is a fine everlasting pea, deserving of general attention as a hardy herbaceous plant. The flowers are of a bright carmine-red hue, several flowers being borne on the stalks which spring from the axils of the leaf-shoots. It is perfectly hardy, but requires a cool, shady, and somewhat sheltered position, as hot sun and drying winds tarnish the peculiar beauty of the flowers. It well deserves a place among a select collection of hardy perennials.

THE STORM OF JULY 23 will be long remembered by those who suffered from its ravages. It appears to have commenced near the Scottish borders, and to have travelled southwards. At Mansfield it raged at four p.m. At Bedford it was at its height at six, and in the northern suburbs of London it expended its fury at 8.30, being succeeded at nine by a complete and delicious calm. In the parishes of Tottenham, Hornsey, and Edmonton, the destruction of property, and especially of glass, was enormous. Mr. Ware, Mr. Norris, Mr. Beckwith, Mr. Rochford, Mr. Day, and Mr. Shirley Hibberd being the principal sufferers.

## AUGUST EXHIBITIONS.

- 1.—KILSBY FLORICULTURAL SOCIETY.—*Annual Exhibition.*
- 2.—ROYAL HORTICULTURAL SOCIETY.—*Fruit and Floral Committees, 11 a.m. ; General Meeting, 1 p.m.*
- 2.—ROYAL OXFORDSHIRE HORTICULTURAL SOCIETY.—*Third Summer Exhibition.*
- 2.—HEWORTH HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 4 AND 5.—CHEADLE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 4 AND 5.—ROSSENDALE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 5 AND 7.—SOUTHAMPTON HORTICULTURAL SOCIETY.—*Second Summer Exhibition.*
- 5.—SOUTHSEA HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 5.—ROYAL BOTANIC SOCIETY.—*Anniversary Meeting, 1 p.m.*
- 11.—FILEY HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 11 AND 12.—MANCHESTER BOTANICAL SOCIETY.—*Exhibition of Carnations and Fruit.*
- 12.—OTLEY HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 15.—CLAYCROSS HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 15 AND 16.—WESTON-SUPER-MARE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 15 AND 16.—SHROPSHIRE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 16 AND 17.—SHREWSBURY HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 16 AND 17.—PRESTON HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 17.—READING HORTICULTURAL SOCIETY.—*Second Summer Exhibition.*
- 17.—TAUNTON DEANE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 17.—SUTTON AND CHEAM HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 17.—EASTBOURNE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 19.—GOSFORTH AND COXLIDGE HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 19.—MIRFIELD HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 22.—NEWBURY HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 23.—CHEPSTOW HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 23.—ISLE OF THANET HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 25.—HELENSBURGH AND GARELOCH HORTICULTURAL SOCIETY.—*Autumn Exhibition.*
- 26.—SEATON BURN HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 28.—EAST TOWER HAMLETS HORTICULTURAL SOCIETY.—*Annual Exhibition.*
- 31.—ROYAL HORTICULTURAL SOCIETY OF IRELAND.—*Autumn Exhibition.*

August.

## TO CORRESPONDENTS.

**TODEA SUPERBA.**—*Miss F., Sussex.*—This beautiful filmy fern may be cultivated with considerable success in the drawing-room or other indoor apartments, provided it can have a position where it will enjoy a fair share of light without being exposed to the rays of the sun. In its native habitat, it is most usually found in the moist shady dells where the fronds are kept constantly moist by the spray from a neighbouring waterfall; but under cultivation, especially when indoors, it is found that the most satisfactory results are obtained by exposing them to a fair amount of light, but without allowing the sun to shine upon them. The plants, when indoors, appear to the best advantage under a circular glass shade of sufficient diameter to afford room enough for the full development of the fronds. For a good specimen the shade should be from fifteen to eighteen inches in diameter. The plants appear to greater advantage when raised a few inches above the level of the rim of the pan with a surfacing of the rich green *Selaginella denticulata*. The pans should have about two inches of rather small crocks placed in the bottom of the pan, with a covering of moss to prevent the soil filtering down between them and impeding the flow of the superfluous moisture. The plant should then be turned out of the pot and put in the middle of the pan, and the soil be packed firmly about it. There is nothing better than fibrous peat, to which a moderate proportion of sharp silver sand and small crocks has been added. Small lumps of sandstone may be substituted for the crocks with advantage, but the addition of the sandstone is not of sufficient importance to justify any great expense in procuring it. The soil should slope gradually from the base of the plant to the rim of the pan, and after the latter is well filled, lay a few clean pebbles over the surface and dibble in between the stones small tufts of the *selaginella* mentioned above. The soil must be maintained in a nice moist state, and the fronds be kept constantly damp, excepting during the winter season, when less moisture is needful. From early in the spring until the autumn, sprinkle the plants overhead once a day. If this is done, the soil will soon be carpeted with the most delicious green, and the appearance of the plant will be such as to at once arrest the attention of the visitor. We would advise you to commence with a strong plant in a three or five-inch pot.

**ASTERS FOR EXHIBITION.**—*Ambitious Amateur.*—The asters are suffering from drought, and unless remedial measures are adopted at once, the blooms will be small in size and inferior in quality. Lay a good thickness of half-rotten stable manure between the rows, and thoroughly soak the bed with soft water or weak liquid manure. Surface waterings are worse than useless, and heavy waterings are not one quarter the service if the surface of the bed is not covered with some loose material like that recommended above. Vegetable refuse of any kind will be better than nothing, but partly-decayed manure is decidedly the most suitable.

**ERADICATING HORSE RADISH.**—*B.S.*—The only practicable plan of clearing the borders of the horse radish will be to chop off the heads as fast as they make their appearance, and in the winter to trench the ground as deep as possible, and carefully remove every particle of root. It will undoubtedly be a troublesome affair to clear the ground, but no chemical agent must be employed for poisoning the roots.

**ANTS IN FRUIT HOUSES.**—*Constant Reader.*—It is by no means difficult to destroy the ants in your fruit-houses. Take a piece of sponge, and place it upon a saucer, and then sprinkle a liberal quantity of powdered loaf-sugar over it. Place the saucer and sponge near their haunts, and when the pores of the sponge are well filled with the insects, shake it over a vessel of hot water; return the sponge to the saucer, and sprinkle more sugar over, and it will be ready for use again. Of course, any number of saucers can be employed at one time, and, as a rule, they should be looked over twice a day. By persevering, the house can soon be cleared of immense numbers.

**INDIA RUBBER PLANT.**—*M.R.*—A warm greenhouse will suit *Ficus elasticus* admirably during the winter months, and at other periods it may be grown in the window of a dwelling-house or a cold greenhouse, and from the end of May to the end of September it may be put out-of-doors, if required for garden decoration.

**TO OBTAIN A SUPPLY OF CALCEOLARIA CUTTINGS.**—As you have a number of



surplus plants in a mixed border, the way out of your difficulty is most easy. Remove the flowers and water copiously, and the plants will soon start into an active growth, and furnish an abundant supply of young shoots that will make excellent cuttings. If there is any probability of the supply from the surplus stock being insufficient, pinch off the flowers from a few plants in the beds. Of course the flowers must not be removed from several plants close together, or an ugly gap will be made. It is unnecessary for us to point out the way to avoid this. The flowers that make their appearance after the first removal must, of course, be nipped off.

**NEW PLANTATIONS OF STRAWBERRIES.**—*Fragarian*.—We are quite aware that a considerable diversity of opinion exists as to the proper time for planting new beds of strawberries, but why this difference of opinion should exist we are quite at a loss to understand. Runners planted at this season of the year, if watered a few times, quickly become established, and form strong crowns by the time the cold weather puts a stop to the growth, and produce a moderate crop the following summer. The extent of the crop depends entirely upon the preparation the runners undergo previous to planting, and if they are allowed to grow into a mass and are then taken up and planted, of course the quantity of fruit will be small. On the other hand, if they are layered in small pots and otherwise managed as those intended for forcing, and planted out immediately they are well rooted, the crop will be scarcely inferior to that produced by established beds. The advantages resulting from layering the runners are so great that really we cannot understand why the common practice of lifting the plants from between the rows is not banished at once from all gardens where any pretensions are made of managing the affairs properly. Where spring planting is adopted, the runners must be grown somewhere during the winter, and there are but two ways of dealing with them; they must either be allowed to remain in the bed amongst the parent plants, which is certainly very undesirable, or they must be planted in nursery beds for the winter. It is certainly no more trouble to plant them in the permanent beds than it is in those of a more temporary character, without the extra labour required in planting them in their permanent quarters in the spring. A rather strong loam is undoubtedly the most suitable for strawberries, but they can be grown successfully in almost any soil, if it is liberally enriched with farmyard manure. The ground should be trenched to a depth of two feet.

**CATERPILLARS ON ZONAL PELARGONIUMS.**—*K. K.*—Hand-picking is the only means by which the caterpillars can be extirpated, for they are on the under side of the leaves, and remain unaffected by the tobacco-powder. Perseverance in hand-picking will soon clear the plants. The geraniums named are procurable in the ordinary course of trade, and the first-named variety may be procured for a few shillings per dozen.

**INTERMEDIATE STOCKS FOR SPRING FLOWERING.**—Early in August sow the seed in pans or boxes, and place them in a shady position out-of-doors. When the stock is strong enough, pot off singly or put two plants in a pot, and keep them in a cold frame during the winter, with just sufficient protection from frost. A compost of turfy loam, enriched with one part thoroughly-decayed hotbed manure, will grow them to perfection. The soil must be perfectly free from wireworms, which do considerable mischief to stocks.

**LOBELIAS FOR CONSERVATORY DECORATION.**—*W. B.*—The easiest way to raise a stock for flowering early in the spring is to sow the seed some time during the present month, and then pot off the seedlings singly when strong enough to handle. Use three-inch pots, and in the early part of February shift into one or two sizes larger. Stop the leading shoots once or twice previous to shifting the stock in the spring, to promote the formation of bushy little specimens; but the growth must not be stopped after the plants are put in the pots in which they are to flower. Use a compost consisting of turfy loam, leaf-mould, manure from an old hotbed, and silver-sand; pot firm, and let the pots be drained effectively. During the winter keep near the glass in a cool greenhouse, and whilst guarding against the soil becoming dust-dry, avoid over-watering. In the spring, when the plants commence growing freely, water liberally, and after the pots are well filled with roots, use weak liquid manure once or twice a week.

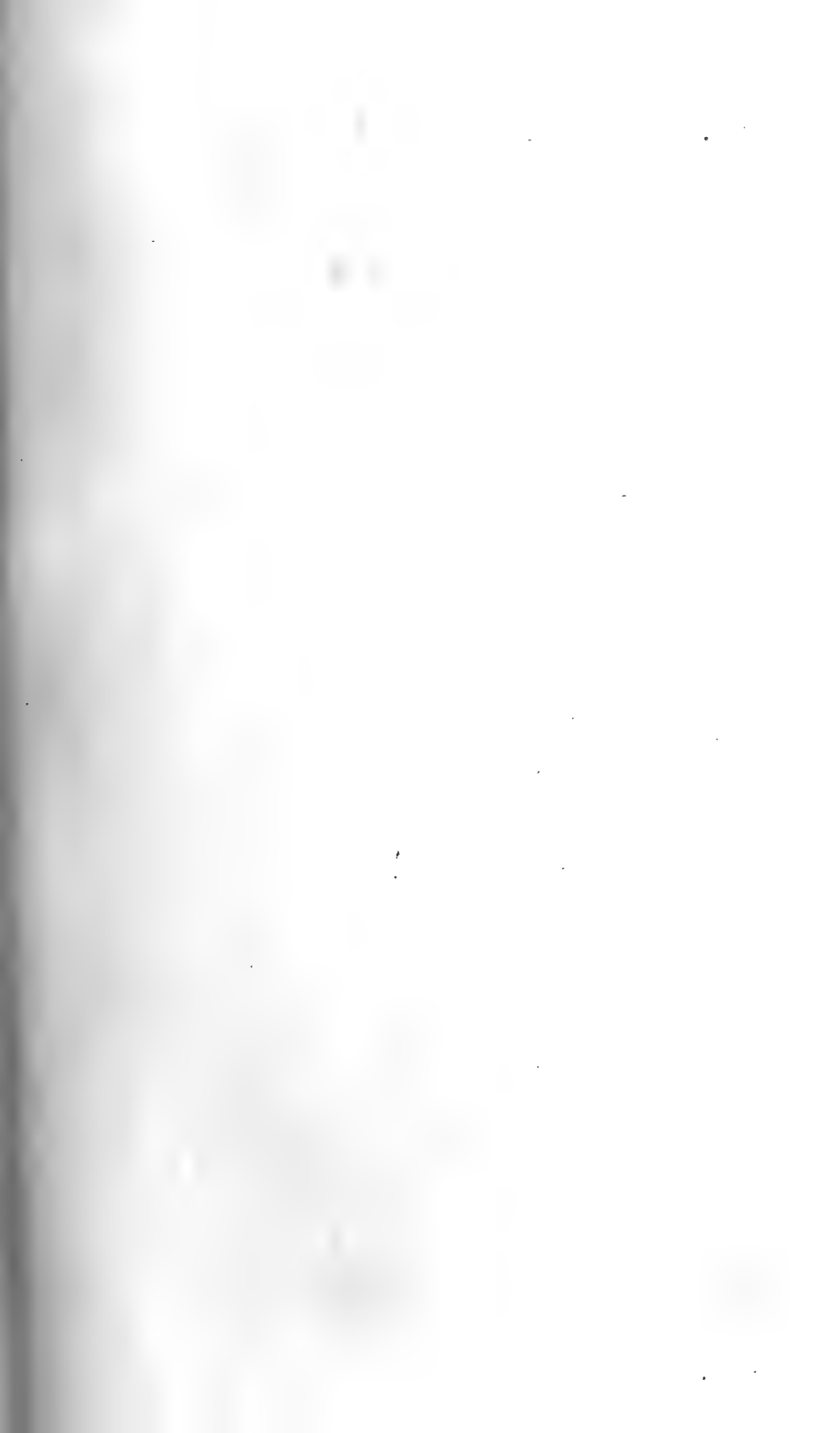
**MELONS CRACKING.**—*A. B.*—We expect you have allowed the plants to become too dry at the roots, and then give the bed a thorough soaking of water. There is

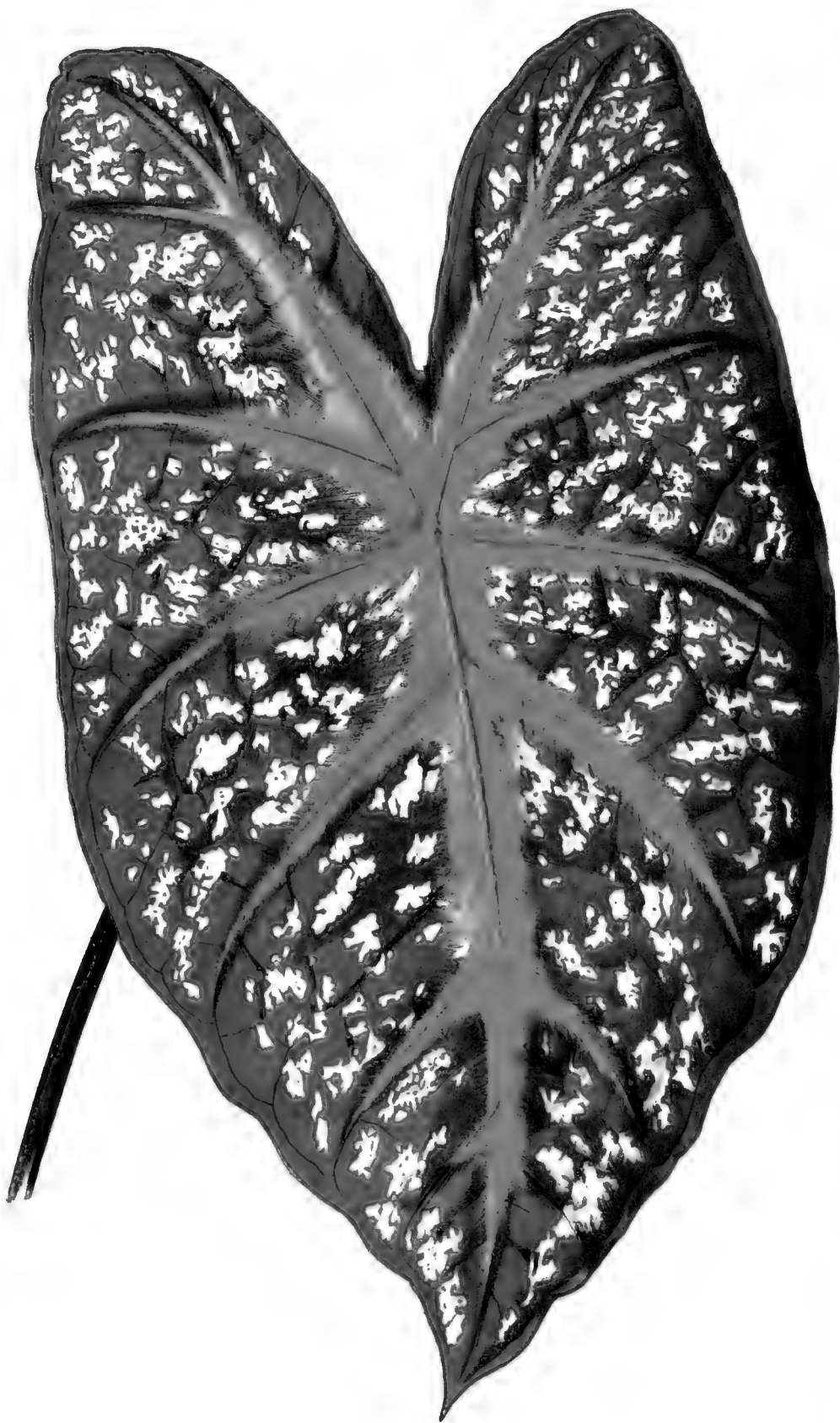
no remedy—at least, we know of nothing that will close them together again. The fruit will attain maturity if nearly ripe, and no water be allowed to lodge in the cavity.

**THRIPS ON VINES.**—*Amateur Grape-grower.*—The vines are badly infested with thrips. Nothing can be done until the crop is gathered, when the vines should undergo a thorough fumigation. Smoke the vinery three times with an interval of two or three days between each time. Allow the laterals to grow unchecked, and if the first series of smokings is not sufficient to thoroughly eradicate the pest, fumigate again as soon as it shows the least signs of life. Carefully guard against applying the smoke in too strong doses, or the foliage will receive considerable injury.

**CULTIVATION OF THE KALOSANTHES.**—*G. S.*—To propagate a stock of those beautiful late summer flowering plants, insert at once, in pots, properly prepared cuttings of the tops of the young-growing shoots that have not flowered. The cuttings will strike freely if inserted in light sandy soil, and placed in a warm corner of the greenhouse, where they can be partly shaded from the sun during the hottest part of the day. Pot off when rooted into three-inch pots, and in the month of February following shift them into six-inch pots. If you are anxious to have large handsome specimens, stop the young shoots twice or three times during the season, and in June shift the stock into eight-inch pots. The young plants will require stopping as soon as they are established in the pots into which they are put when first potted off. In subsequent years, as soon as the beauty of the flowers is past, cut the branches back to within about two inches of the base, and as soon as the young growth is about half-an-inch in length, turn them out of the pots, partly reduce the ball of soil, and repot in others one size larger; the following spring shift into two sizes larger. When cut back and repotted the second year, they should be returned to the same sized pot again; and in the spring of the third year a pot one size larger will be quite sufficient. During this time due attention must be paid to training the young growth, or the labour and attention of potting and watering will be simply wasted. The soil should consist of two parts turfy loam, one part fibry peat, and one part of leaf-mould or thoroughly-decayed hotbed manure; or the fourth part may consist of equal quantities of leaf-mould and manure. The whole of the ingredients must be well incorporated together, and a liberal proportion—say a fifth part—of silver-sand must be added. The stock must be kept in a light and rather airy situation during the winter; but it must not be exposed to any cold draughts. Very little moisture will be required at the roots when the plants are at rest, which, generally speaking, is from October until February. At other times they require rather liberal supplies, and a few doses of weak liquid manure will be highly advantageous during the early part of the year, when they are growing freely. It is highly essential to have the pots efficiently drained.

**THE BEST PEAS.**—In a trial culture of a large number of varieties of peas by Mr. Shirley Hibberd at Stoke Newington, the following proved to be distinct and fine:—*Laxton's William I.* was the best early pea, and *Allen's Champion* the best second early. Those old favourites, *Sangster's No. 1* and *Bishop's Longpod*, were still equal to their reputation, none of the newer sorts being able to supersede them quite. Amongst the main crop sorts, the most strikingly handsome, productive, and well-flavoured varieties were *Turner's Dr. Maclean*, *Laxton's Supreme*, *British Queen*, and *Ne Plus Ultra*. These eight varieties are enough for any garden. The following were also good, *Auvergne*, *New Sword*, *Ringwood Marrow*, *Princess Royal*, and *James's Prolific*.





## NOTES ON CALADIUMS.

(With Coloured Illustration of *Caladium Chantini*.)

BY WILLIAM JORDAN,

Head Gardener, Cazinaro House, Wimbledon, S.W.



ALADIUMS have much to recommend them to the notice of amateurs who are partial to plants with foliage remarkable for its beauty; and it is not a matter for surprise that they should have become immensely popular. They are alike remarkable for nobility of aspect and the splendour of their leaf tints; and not the least important of their characteristic features is the comparative ease with which specimens of the most magnificent character may be produced. To cultivate them successfully, or indeed at all, the assistance of the temperature of a plant stove is essential. The specific forms from which the large number of hybrids now in cultivation have been raised, are mostly natives of the most tropical parts of South America, consequently they require a comparatively high temperature to maintain them in a healthy condition. Several of the most valuable species, including *Caladium Chantini*, which, as will be seen by the accompanying illustration, has leaves remarkable for the richness of their marking, and *C. argyrites*, which is of dwarf growth, and one of the most valuable table plants we have, have been introduced from the banks of the Amazon. They are, nevertheless, mostly hardy enough to admit of their being employed in the embellishment of the conservatory for a period of six weeks or two months during the summer season; but a stove temperature is essential for promoting a free growth in the early part of the year, and for the preservation of the corms when at rest during the winter months.

Caladiums require a distinct season of growth and of rest, and, in the ordinary course, the first-mentioned of the two seasons commences in February. The corms may, with the assistance of a brisk bottom-heat, be started into growth in January; but as the plants are not required for decorative purposes until after midsummer, it is as a rule preferable to keep them quiet until the end of February or the early part of March, and then place them under conditions most favourable to their making a vigorous growth from the first. In the first place, turn them out of the pots and remove all the old soil in which they were grown the previous season from about the corms, then proceed to pot them according to the purpose for which they are required. If small plants are wanted for table decoration, put them in five-inch pots, one medium-sized corm to each. Plants of a suitable size for vases and for general decorations, may be produced by employing six-inch pots, and putting one large corm, or two of medium size, into each. To produce large specimens, use ten-inch pots, and put from three to five corms, according to their

size, in each. Those in the smaller pots are to be grown on without shifting, excepting it be a few of those in the six-inch pots, and these may be shifted into pots one size larger. Those intended for specimens should have a shift into pots twelve or fifteen inches in diameter as soon as the pots occupied are nicely filled with roots. They require no further repotting, as pots of the last-mentioned size will be quite sufficient for the largest specimens desirable. When medium-sized specimens only are required, it will not be necessary to repot them, for with the aid of liberal supplies of water, those in ten-inch pots will continue to make steady progress until the end of the season.

A moderately rich compost is necessary in the cultivation of caladiums; and one that I have found to be in every way suitable is prepared by the thorough incorporation of turfy loam two parts, peat one part, leaf-mould one part, and about half a part each of thoroughly decayed cow manure and sharp silver sand. The peat and loam must not be broken up fine, because the roots run more freely, and the growth is more satisfactory, when the compost is rather lumpy. The pots must be well drained, and the usual precaution taken of covering the crocks with a thin layer of some rough material, to prevent the fine soil running down between the crocks and checking the ready escape of the superfluous moisture. Then fill the pots with the prepared compost to within about three inches of the rim, when pressed rather firm, and upon this place the corms. Those potted singly should be put in the centre, and when three or more are put in each pot, they should be arranged as near the centre as is practicable without their touching each other. They must then be covered to a depth of about half an inch with the compost.

The temperature in which the corms are started may range between 65° and 80°, and, if convenient, partly plunge the pots in a hotbed, for a brisk bottom-heat is found of considerable service in inducing them to make a vigorous start. At the same time bottom-heat is not essential to their making a satisfactory growth. Apply water very sparingly at first, for until the roots run freely the soil must be maintained in a moderately moist condition only. When, however, the pots are well filled with roots and the plants in full growth, they may be supplied most liberally with water, for after arriving at this stage there will not be much risk of the moisture being in excess of their requirements. The atmosphere must be fairly well charged with humidity, and a moderate syringing overhead once a day will be most beneficial in keeping red spider down, and in washing off any particles of dust that may happen to settle upon the leaves. In bright weather, from March until the end of August, the plants must be protected from brilliant sunshine by means of shading materials, but they must not be shaded more than is really necessary. When grown under too dense a shade, as is often the case, the leaf-stalks become drawn and weakly, whilst the leaves are wanting in substance, and the colouring is insufficiently developed.

To keep the corms perfectly sound through the winter is by many cultivators found a rather difficult task. If, however, the

plants are dried off gradually, and the pots laid upon their sides in the stove as soon as the greater portion of the leaves have died down, very few of the corms will perish during the winter. Plants employed in the decoration of the conservatory during the summer should be taken back to the stove immediately the leaves begin to fade, and be gradually dried off. To keep the soil dust dry during the winter is not desirable, and my practice is to lay the pots on their sides underneath the plant stage, and to syringe all over the pots two or three times a week. By this means the corms are preserved in the best possible condition.

Previous to giving the names of a few of the best kinds for general cultivation, it may be well to add that strong plants in five or six-inch pots, purchased now and safely wintered, will yield corms of sufficient size to produce large specimens next year. They will certainly be preferable to small plants purchased in the spring. The kinds which may be specially recommended to those who require a few of the best only, are as follows:—

*Argyrites*, a dwarf grower, with small leaves, thickly spotted with white.

*Beethoven*, ground colour white, veined with green, centre rib delicate rose.

*Chantini*, dark green ground, with a brilliant crimson centre and white spots.

*De Humboldt*, glossy green, spotted with bright red.

*E. G. Henderson*, green, marked with transparent rose spots and brilliant crimson rays and centre.

*Duc De Morny*, deep green, with crimson rayed centre.

*Henri Doucet*, the centre dark crimson; mid-rib and veins bright reddish crimson; outer portion of leaf green.

*Herold*, dark carmine veins, with light green ground, blotched with pure white.

*Meyerbeer*, white ground, green veins and red mid-ribs.

*Napoleon III.*, crimson centre, with carmine red spots on a green ground.

*Prince Albert Edward*, dark green, with crimson mid-rib, radiating from the centre towards the margins, the intervening spaces densely spotted with white.

*Reine Victoria*, green veins and margins, spotted between with white and crimson.

*Triomphe de L'Exposition*, crimson centre, with red ribs and green border.

PHILADELPHIA INTERNATIONAL EXHIBITION, 1876.—The great fruit show at Philadelphia, in connection with this Exhibition, will take place from September 11 to 16, in a special annexe to the Agricultural Hall. Tables and dishes will be provided free of charge, and contributions will also be received unpacked and labelled by the Department. The display promises to be a great success, for the horticultural societies from Iowa, Michigan, Kansas, Indiana, Massachusetts, Ohio, and Canada, have asked for space for ten thousand plates. It will, no doubt, be the most wonderful sight ever seen in the world, and Philadelphia ought to be the great central point for horticulturists in September, 1876.

September.

## VICTORIA PARK.

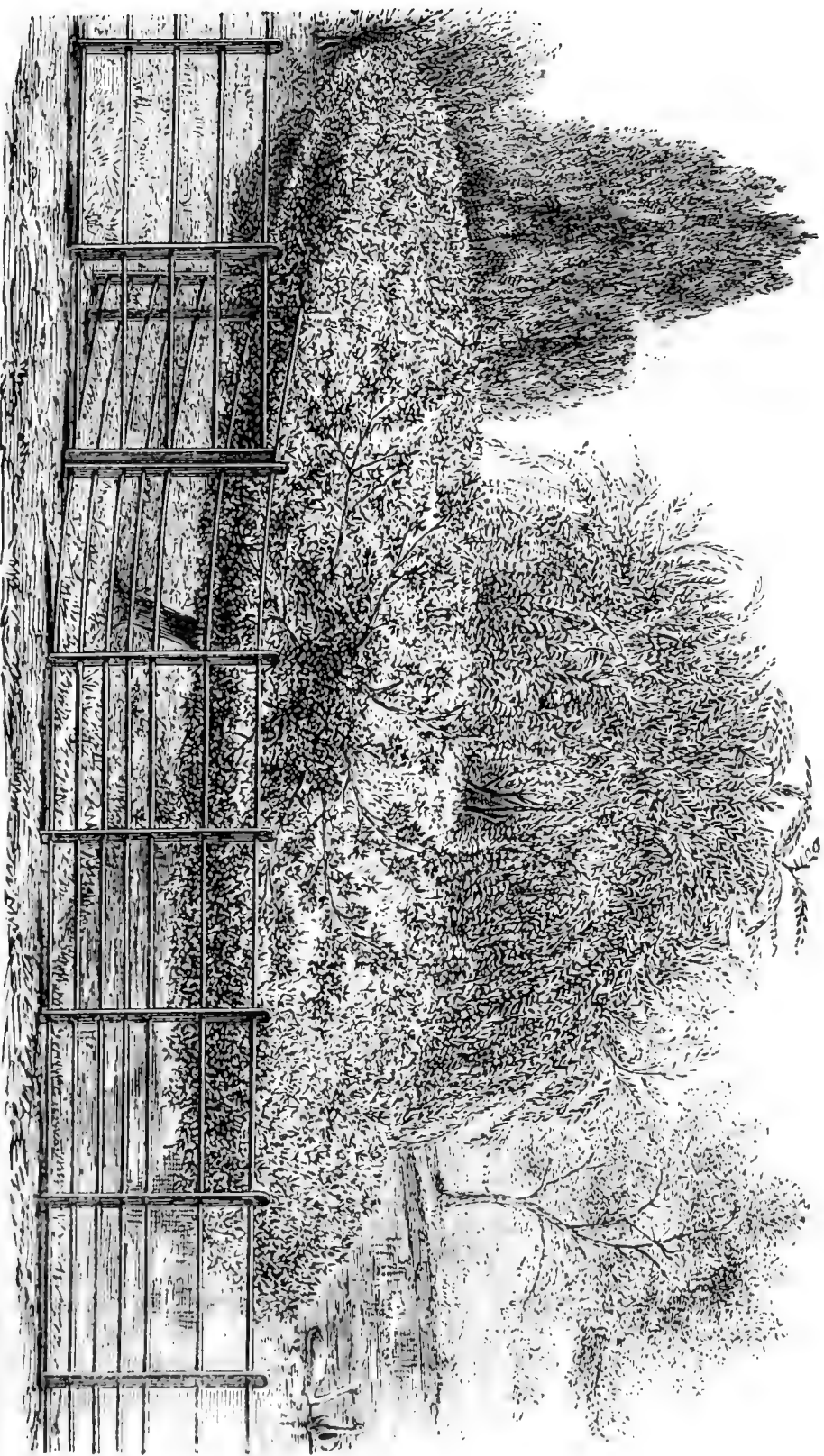
BY GEORGE GORDON.



VICTORIA PARK has long been celebrated for its high keeping and for the great excellency of the annual display of summer bedders; but we are bound to say that in no previous year has it been better kept, or the bedding display been more thoroughly satisfactory, than in the present season. The spacious lawns are throughout remarkable for the neat appearance they present, and for the fine, deep green colour of the turf; and the bedding arrangements are characterized by great taste and extreme richness. In the matter of floral embellishments, Victoria Park, notwithstanding its being situate at the east end of the metropolis, is in no way second to the more important parks at the west end; and the majority of the hundreds of professionals and others who come up to London annually to inspect the various displays of bedding plants in the public parks, make a point of visiting it. The park is rich in trees, especially of willows and thorns, which are represented by collections remarkable for their completeness; and although it is surrounded by densely-populated neighbourhoods, and has large manufactories on all sides, the trees do not appear to have suffered in an appreciable degree from smoke, for they are in the most excellent condition, and are now sufficiently developed to show the true character of the species represented. In addition to the dressed parts of the park, which are highly coloured with bedding plants in summer, there is a very large cricket ground, an ample space for gymnastic exercises, and great breadths of turf over which the visitors can ramble according to their inclinations. There are also spacious lakes for boating and bathing. Altogether, the park affords a most delightful retreat for the residents in the neighbourhood, the greater proportion of which are not overburdened with this world's goods; and it is so well appreciated that it is quite unnecessary to recommend those who reside near the park to visit it. But we would strongly advise those who are specially interested in flower-garden decoration, to visit the park before the cold weather puts an end to the bedders. That they would derive much pleasure from the visit there can be no doubt, and it is equally certain that they would pick up hints which hereafter may be turned to good account.

On entering the park at Shore gate we have immediately before us two large circular blocks of evergreen shrubs enclosed with borders about six feet in width. These borders are richly coloured with flowering and leaf plants. If instead of proceeding down Shore Place we turn up the drive to the left, we shall soon reach the great geometrical scheme, which consists of about forty large beds. This is one of the chief points of interest in the park, as well it might be, for the beds are filled chiefly with zonal pelargoniums, and make a grand display of colour. They are edged with dwarf-growing plants





GROUP OF TREES IN VICTORIA PARK.

with coloured leafage, such as the *Alternantheras*, *Coleus*, and *Golden Feather*, and have a highly-finished as well as a brilliant appearance. After leaving the geometrical scheme and proceeding along the walk towards the ornamental lake, we come to several grand beds of sub-tropical plants, and some exquisite examples of carpet or tapestry bedding. The latter are so good that anything better it would be impossible to conceive. The principal plants employed in the carpet bedding are *Alternanthera amœna*, *Coleus Verschaffelti*, *Golden Feather*, and *Echeveria secunda glauca*. *Lobelia pumila grandiflora* is also employed with good effect in several of the beds. Between the beds a number of the choicer fine foliage plants are dotted about singly on the grass, and they very materially enhance the general effect. The scroll beds by the side of the drive, between the Royal and Crown hotels, are most effectively coloured, and constitute a very important feature of the bedding arrangements. One of the great features of the park is, however, formed by the numerous rare, curious, interesting, and noble trees within its boundaries, and the numerous glorious combinations of arboreal beauty to be found on all sides. As a fitting accompaniment to these brief remarks, a sketch is given of a very interesting group of trees at the east end of the lake. In the foreground is the huge tabular head of the Cockspur Thorn, a specimen as unique as it is peculiar. To the right is a fine example of the American Lime, and to the left is a well-developed specimen of the Chinese *Arbor-vitæ*, and at the back is *Prunus (cerasus) serotinus*, a North American species of cherry, remarkable for its elegance of outline.

The park is under the superintendence of Mr. McIntyre, and abundant evidence of his taste and skill is afforded at every step taken.

## THE CULTIVATION OF CAPE HEATHS.

BY WILLIAM COLE,

The Grove Vineyard, Feltham.



CAPE HEATHS are not so popular amongst amateur cultivators as their merits warrant, because of the misapprehension which exists in reference to their cultivation, and anything which will help to remove this cannot be otherwise than useful. It is supposed that they are exceedingly difficult of cultivation, and that the production of a really first-class specimen can be accomplished by an experienced professional only. But it must be said that there are no good grounds for this supposition, as in the course of these remarks it will be possible to show. It is true they require rather more care in the way of potting, air-giving, and watering than the majority of soft-wooded plants, and also that they may be killed with less difficulty than a zonal pelargonium; but it does not necessarily follow that they are so peculiar in their requirements that they can be suc-

cessfully handled by those only who have had considerable experience. As a matter of fact, ericas may be grown most successfully by amateurs, and gardeners also, who are but imperfectly acquainted with them, and those who take them in hand for the first time may be well assured that with an ordinary amount of attention they will become sufficiently acquainted with their cultural requirements to enable them to produce excellent specimens. I am enabled to say this after many years' experience with Cape Heaths, and to state the case briefly, their cultivation is not attended with more difficulties than are met with in the management of other hard-wooded plants.

The *Ericas* constitute one of the most important classes of greenhouse plants we have, for comprised within the genus are upwards of five hundred species and varieties known to science, and of these nearly three hundred are in cultivation. Of their beauty it is perhaps unnecessary to speak, but it must be said that well-grown plants, when in flower, are remarkably attractive, and seldom fail to bring much credit to the cultivator. A very strong family likeness prevails throughout—so strong, in fact, that after any one has become acquainted with a single specimen there is no difficulty in recognizing others as belonging to the family. Nevertheless, the flowers of the several species are so distinct in shape and colour that a very large collection may be had without having two alike. Indeed, a collection of from forty to sixty kinds, placed in a neat house by themselves, would form a very interesting and distinctive feature in a garden of moderate extent, and by judicious selection a good display of flowers, extending over a considerable period, may be had.

The propagation of heaths should not be attempted by amateurs, or, indeed, by any one who has not had special training in the propagating department of a good nursery, for under the most favourable conditions the cuttings are not remarkable for the freedom with which they strike. Great care is necessary in selecting and inserting the cuttings, and the most unremitting attention is required afterwards. Moreover, a convenient structure is required, and several years elapse before the plants attain a sufficient size to contribute to the attractiveness of the structure in which they are placed. The only course the private cultivator can take, with advantage to himself, is to commence with bushy little plants well established in five or six-inch pots. These will bloom freely in the course of the season following their purchase, and in a few years form nice specimens and produce a rich display of flowers.

A span-roof house is perhaps the best place for heaths as well as for hard-wooded plants generally, as they can be ventilated and the plants be more freely exposed to the light on all sides. This is practicable when they occupy a lean-to structure, and it must be constantly borne in mind that light and air are, so to speak, the very life of ericaceous plants. They will do well enough in lean-to's, provided other conditions are favourable, but in alluding to their culture it appears desirable to point out the form of structure best suited to their requirements. When grown in houses occupied with a mixed collection, the heaths should have the most light and airy position the structure affords. Especially is it necessary to avoid

crowding them up with soft-wooded plants during the winter season, because of the risk of their suffering from the stagnant state of the atmosphere, and ultimately becoming infested with mildew, which is undoubtedly the most dangerous of the enemies with which they have to contend. It is also important to separate them from plants requiring the assistance of fire-heat during the winter season, beyond that necessary for the maintenance of a dry atmosphere, and for keeping them safe from frost. It is, indeed, better for them to be exposed to a few degrees of frost than to a temperature in excess of their requirements.

The selection of a suitable soil is a point of the first importance, for if the plants are potted in peat, which soon becomes sour, or is in other respects unfavourable to the development of the delicate fibrils, all the skill in the world will fail in maintaining them in good health. As in the case of our native heaths, those from the Cape of Good Hope grow naturally in light sandy soil rich in fibrous matter, such as in this country is known as peat. The best peat for heaths is that obtained from a place where the native ling is found to grow freely. If it has a good sprinkling of sand in it, so much the better, but as the sand can be readily added its presence naturally is not of much consequence. The peat should not be cut to a depth exceeding three inches, because below that it does not, as a rule, contain much fibrous matter, and in consequence quickly becomes sour. Amateurs who have to purchase soil should obtain it from a nursery in which heaths and other hard-wooded plants are extensively grown, for an immense quantity of peat is sold which is quite unfit for delicately-rooted plants. In the preparation of the peat, chop it up moderately fine, according to the size of the plants, and add a liberal addition of sharp silver sand. The pots must be efficiently drained.

Crocks perfectly clean, and broken up to the size of large cob-nuts, are preferable, and the thickness of the layer should range from one inch in six-inch pots, to two inches and a half in pots twelve inches in diameter. The usual precaution of covering the crocks with a layer of the rougher portion of the peat must be taken, and if at hand, add a sprinkling of small clean pebbles or small pieces of freestone to the soil placed in the pot previous to the plant being put in position. Put sufficient soil in the pot to raise the surface of the ball of soil to within three-quarters of an inch of the rim in the case of pots six inches in diameter, so that there may be no difficulty in supplying them with water. The distance between the surface and the rim must be increased in proportion to the size of the pot, but in no case should it exceed one inch and a half, for if heaths are potted too low there is a risk of their decaying at the collar—*i.e.*, that portion of the stem immediately above the surface of the soil. The space between the sides of the ball and the pot must be pressed as firm as it is possible to make it, because if filled in at all loosely the water will soak away round the sides and leave the centre of the ball quite dry, to the injury of the plants.

Careful watering is a prime necessity, for heaths must not suffer from drought, neither must they be injured by an over-abundant

supply of moisture. The only safe course is to apply sufficient to thoroughly moisten the ball, and then not to water them again until the soil has become rather dry. Cultivators frequently injure, and sometimes kill, heaths, through a neglect of the important precaution of applying sufficient water at each application to thoroughly moisten the ball. The space on the surface is filled once, as in watering plants potted in loam, but as a rule that is not sufficient to do more than moisten the upper half of the ball, leaving the lower half quite dry. The water should be applied again and again, until the surplus runs through the hole in the bottom of the pot. When, by accident, the ball of soil becomes dust-dry, the pot should be placed in a vessel of water and be allowed to remain in it, and no longer, until the air bubbles cease to rise. Because the necessity for thorough watering has been insisted upon, it must not be supposed that they can be over-watered with impunity. So far from this being the case, they must not have a drop beyond their requirements, and care must be taken not to water them until the soil has become dry again, as indicated by the ringing sound given off by the pot when sharply rapped by the knuckles. Rain-water must invariably be employed.

During the summer season the plants may be placed out of doors, but it is preferable to place them in a pit where they can have protection from heavy rains, which, if long continued, saturate the soil and injure the roots. Whether out of doors or in a frame, stand the pots upon a hard surface, to prevent the ingress of worms.

During the winter season the stock must have a light airy position in a dry greenhouse, and as an excess of artificial heat is most injurious, no more should be employed than is necessary to exclude the frost. During periods of long-continued dull, moist weather it may be necessary to employ a little fire-heat to dry up superfluous moisture and promote a free circulation of air. For this purpose the fire should be started early in the morning, and the ventilators—those at the apex more especially—be opened sufficiently for the stagnant atmosphere to be readily driven out. Sometimes mildew, will make its appearance during the winter, and it is therefore, needful that it should be well known that a dusting of sulphur is the best remedy.

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MR. PEACOCK, SUDBURY HOUSE, HAMMERSMITH, wishes us to intimate to our readers, that those who are interested in succulents may inspect his collection any Tuesday during September, between the hours of ten and four, and that Mr. Croucher, the gardener, will be present and most happy to give any information. The collection is remarkable for its extent and the rarity of a large number of the specimens of which it consists; and we would strongly recommend those of our readers resident within a convenient distance to avail themselves of Mr. Peacock's kindness.

GODETIA LADY ALBEMARLE, of which Messrs. Daniels Bros., Norwich, possess the stock, is a most valuable hardy annual. The flowers are large in size, the colour rich glossy crimson. The plants attain a height of twelve inches, and assume the form of neat bushes, and in due season become quite solid with bloom. Plants raised from autumn-sown seed bloom in the early part of the summer following, and those raised from spring-sown seed bloom the following July and August.

## REPORT ON RED AND WHITE CURRANTS FRUITED AT CHISWICK.

BY A. F. BARRON,

Gardener-in-chief to the Royal Horticultural Society.



HERE is, perhaps, no class of fruits in ordinary cultivation in this country in which so much confusion exists in regard to their nomenclature or their distinctive merits as in that of Currants. Names exist in plentiful variety, but the fruits of all the kinds are very similar, so that it has been impossible to distinguish them. The varieties may vary to some extent as to the size of the bunches, berries, their colour, cropping qualities, etc.; but as these are considerably affected by cultivation, situation, etc., their comparative and distinctive merits can only be ascertained when all the varieties are grown together under the same conditions, as in the present instance.

The collection, consisting of forty-five reputed distinct varieties, was got together from various quarters, and represents the most of the names to be met with in English nurseries and a few of the French. Altogether there exists about sixty distinct names as applied to the Red Currants, and about fifteen to the White, so that the remainder have to be collected and described.

The classification is based chiefly on the appearance of the plants, their foliage, habit of growth, etc. This is very decided, distinct, and easily to be recognized. The typical names adopted may not in every instance be correct, but the varieties given as synonyms are all identical the one with the other as they have been received by the Society. There is no means of distinguishing any of the varieties by their fruit alone.

### REDS.

1. RED DUTCH [syns., *Fertile*, *Fertile d'Angleterre*, *Fertile de Palluau*, *Fertile de Bertin*, *La Hâtive*, *Hâtive de Bertin*, *Bertin No. 9*, *Belle de St. Gilles*, *Chenonceaux*, *Grosse Rouge de Boulogne*, *Queen Victoria*, *Red Grape*].—This is one of the best varieties in cultivation. A most abundant bearer, and ripening early. The bunches are long, and the berries large, full and juicy, and of a bright red colour. The plant is of a dwarf and somewhat slender habit of growth, never attaining a large size. The leaves broad and flat, deep green, having a sort of metallic glaucous hue, which renders it in appearance quite distinct. The synonyms here given are all referable to this one variety, and which is the one generally grown and known in this country as the Red Dutch.

2. KNIGHT'S LARGE RED [syns. *Knight's Sweet Red*, *Goliath*, *Fielder's Red*, *Palmer's Late Red*, *Pitmaston Red*, *Pitmaston Prolific*, *Large Sweet Red*, *Bertin No. 1*, *Dancer's Selected*].—This

variety is not quite so early as the Red Dutch. It is a most abundant bearer. The bunches are long and produced in immense clusters. Berries of medium size, of a bright red colour. The plant is of strong and vigorous growth, the shoots growing mostly erect. Leaves pale green, rather small, somewhat deeply cut and crumpled in appearance. This variety is the one in most general cultivation in the market gardens around London, having probably been selected for its fine vigorous constitution. Messrs. Krelage of Haarlem sent fruiting branches of this variety as the true Red Dutch Currant as grown in Holland.

3. OLD RED [syn., *Rouge Commun*].—This greatly resembles the preceding. The plant is of most robust growth, but a poor cropper, and with small berries. It is most probably the original stock from which Knight's Large Red, the present common variety, has been selected.

4. RED CHERRY [syn., *La Versailles*].—The berries of this variety are very large and handsome, almost like small cherries; but they are produced very sparingly, the bunches frequently consisting of only one berry, and from twenty to thirty berries on a plant. The plant is of a gross spreading habit of growth. The shoots pale, very gross. Leaves very large, broad, deep green. It is unsuited for cultivation in the open ground, as the shoots, from their gross nature, break off so easily, and so no plant is formed. The buds do not break freely after pruning. Grown against a wall, it is more satisfactory.

5. HOUGHTON SEEDLING [syns., *Houghton Castle*, *Orangefield*].—This is a late variety. The berries of medium size, deep red, and rather acid. Bunches long, produced in very thick clusters. A most abundant cropper. The plant is of a very robust, close-growing, sturdy, stubby habit, very rarely producing long shoots. The leaves are small, deep dark green, somewhat deeply cut and crumpled in appearance. Very distinct. This variety, from its close compact habit of growth and sturdy constitution, is very suitable for growing in exposed situations, and for training as an espalier or pyramid.

6. GONDOUIN [syns., *Raby Castle*, *May's Victoria*, *Imperiale Rouge*, *Hollande à grappes longues*].—This is a remarkably strong-growing late variety. The bunches are very long. Berries very large or above medium, of a bright red colour, with a sharp acidity. As a bearer it is only medium. The plant is of a most robust growth, soon forming large bushes. Shoots strong, reddish. Leaves large, dark green, with reddish veinings, flat, deeply cut, very showy, and very distinct. The flowers have also a reddish tinge. This is one of the latest Currants to ripen and hang well on the plants afterwards. The plant, from its strong vigorous growth, is very suitable for growing as standards or large bushes.

7. VERRIER'S ROUGE.—This appears to be a compact dwarf-growing form of the Gondouin.

8. MALLOW-LEAVED [syns., *New Sweet Red*].—This is a strong-growing late variety. Bunches long. Berries small, of a pale red colour. Late in ripening, and a somewhat poor cropper. The



plant is of very distinct appearance, strong, tall-growing, with pale shoots. Leaves large, flat, soft, downy, like a Mallow, of a pale green colour, sometimes like the Black Currant.

9. LACE-LEAVED [syns., *Large Sweet Red*, *Large Red*, *d'Hollande a feuille bordee*].—A fine, compact-growing, bushy variety. Bunches of a medium size. Berries medium, of a pale red colour. A most abundant bearer. Shoots dark, spreading. Leaves dark green, with a glaucous hue, and the greater portion, more especially those in the shade, having a narrow silver lacing or border, giving the plants a slight variegated appearance. A very excellent good-habited variety.

10. CUP-LEAVED [syns., *Feuille laciniee*, *Eyatt Nova*].—Plant of somewhat slender spreading growth. Bunches of medium size. Berries small, of a pale red. A very poor cropper. Leaves small, deeply cut, or lacinated and pointed, rendering it very distinct in appearance.

11. VARIEGATED [syn., *Feuille panachee*].—This is a variegated-leaved form of the common Red. A poor cropper. The leaves are prettily variegated on their appearance in spring, but soon become dull and dingy.

12. STRIPED-FRUITED.—This in appearance resembles the common Red. Berries small, pale in colour, with one or two darker stripes. Rather pretty. A very poor cropper. The Gloire des Sabons is stated to be a white variety, prettily striped with red. At Chiswick it proved the same as Gondoun.

13. CHAMPAGNE [syn., *Couleur de Chair*].—This is remarkable on account of the colour of the berries, which are pale flesh, and their sweet flavour being exactly similar to the White varieties. Bunches short. Berries small. The plant is of dwarf bushy habit, and robust. Leaves broad flat, having the appearance of the Red Dutch. It is an abundant bearer. A desirable variety.

#### WHITES.

14. COMMON WHITE [syn., *Blanche Commun*].—Plant of dwarf bushy habit. Leaves small, and deeply cut and crumpled in their appearance. Bunches small; berries small.

15. WILMOT'S LARGE WHITE [syn., *Blanche d'Angleterre*].—Plant of free, somewhat erect growth. Leaves large, flat. Bunch of medium size. Berries large, white. A good cropper.

16. WHITE DUTCH [syn., *Blanche d'Hollande*].—Plant, leaves, etc., of exactly the same appearance as the Red Dutch—dwarf, compact, bushy. Bunches large; berries large or very large, of a yellowish-white colour, very fine, juicy, and sweet. A great cropper.

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THE LARGEST NURSERY IN AMERICA is, according to the *Albany Country Gentleman*, that of Messrs. Ellwanger and Barry, at Rochester. It extends over 650 acres, and during the eight busy months 250 men and thirty horses are employed.



## THE BIRDS AND THE CROPS.

BY A. JOIGNEAUX, LYONS.



**P**REDACEOUS BIRDS which hunt by day are less useful to agriculture than those which seek their food by night. Still, the majority deserve protection, as they live chiefly on the small rodents which make such havoc in our fields. In my opinion, the only diurnal birds of prey to be feared are the vulture, the buzzard, the kite, the sparrow-hawk, and the goshawk; but complaints have been made, too—and not altogether without foundation—of pies, jays, and crows.

It is not surprising that birds considered useful in some localities should be esteemed mischievous in others. This depends greatly on the description of culture in vogue, and the remark applies with equal force to other creatures besides birds. But I am wandering from my subject. Fowls and ducks—especially fowls,—which do so much damage in the garden by picking and scratching the borders, are undoubtedly serviceable on newly-turned land, and in vineyards infested with the *eumolpus*, a particularly troublesome insect, generally known in France under the name of “gribouri” or “ecrivain.” Of the employment of poultry, and locomotive poultry hutches, in the destruction of this insect, I shall speak hereafter. Meantime, a word must be said next of partridges and quails. There is but one opinion about these birds, that they rid us of an incredible number of insects, both in the perfect and the grub state. But, in thus doing them justice, the quality of their flesh is not forgotten; and it is not uncommon to meet with advocates of their wholesale destruction in the season. This is to be regretted. There is a consolation, however, in the thought that the bad shots far outnumber the good ones, and that the restrictions respecting the use of nets and other appliances for destroying game on any alarmingly large scale, are strictly enforced.

The lark belongs to the same category, and should be protected. Although graminivorous, it does not disdain insect food, and diligently hunts out wheat-flies and wireworms, of which more hereafter. Blackbirds and thrushes are commendable in all respects. Swallows and martins, which are stupidly hunted down in some parts of the south of France, are great insect-eaters. Like the flycatchers, they capture immense numbers of flies, and dipterous insects of all sorts, in the vicinity of their nests.

Amongst the smaller birds, the warblers, beyond question, are the most useful and commendable. We find them everywhere—in the fields, in the woods, in the garden,—never absent and never idle. Most of them migrate in winter to seek their food further south; but some of them, as the redbreasts, wrens, etc., remain with us all the year round, and labour indefatigably at their calling of caterpillar hunters. In this respect they are invaluable, as they destroy the caterpillars even in the egg.

The tits, which also winter with us, hunt out eggs and grubs in

the crevices of the bark and in the buds of trees. In spring they are very active after aphides. Blackcaps also eat the aphids readily, especially in rose bushes, where there are legions. I would especially commend this bird to the reader's notice. Nor can too much protection be extended to the goldfinch, which is met with in the fields and meadows; the siskin, which frequents meadows near the water; the chats, which take up their abode in the vines, and hunt down a very mischievous insect, the *pyrale*; the redstart of our gardens; the various tree-creepers; and the wren and the nut-hatch, whose business of life it is to free our trees and shrubs of a host of small insect foes.

The grosbeaks are graminivorous, and sometimes do more harm than good; but it should be remembered all live on insects while young. They should therefore be left in peace whilst they are bringing up their young, and only meddled with subsequently, when they betake themselves to pillage. This is not the opinion of many competent authorities, and some persons will perhaps accuse me of ingratitude to the small birds. For this I am prepared, and freely admit beforehand that, in matters agricultural, I set all sentiment aside.

Granting that grosbeaks, sparrows, chaffinches, and bullfinches rid us of a host of insects to feed their young, I still shall shoot the sparrows when I find them attacking my rows of peas, or the grosbeaks robbing the cherries, or the bullfinches picking off the buds of the fruit-trees, or the chaffinches working among the seeds of the oil crops.

It is all very well for dwellers in towns to take the part of the birds. There they do no harm. There are no fruit-trees, no crops. They cheer us with their songs as they flit before our windows. Nothing can be said against them. But in the country it is different. There are too many difficulties to be faced already in the rearing of our crops, as drought and frost and wet, to allow room for æsthetic considerations in favour of pillagers.

No one is more anxious than I am for the protection of all *useful* creatures. This is one reason why I make a distinction between those which are, in my opinion, unequivocally useful and others which, in certain circumstances, may prove mischievous. It must not be forgotten that country people are closer observers of nature than others; and any one asserting that the sparrow, the chaffinch, the bullfinch, the linnet, or the goldfinch were immaculate birds, would run the risk of being laughed at to his face, and having any advice he offered, however good and authoritative, in its turn disregarded.

I fully recognize the necessity of protecting the small birds in the woods and hedges and waysides, where they are always useful; of leaving the linnets and goldfinches unmolested so long as they confine themselves to the seeds of weeds and noxious plants; but it appears to me to be going too far to blame the farmer who protects his crops of millet and flax from the linnets, or the gardener who shoots down the goldfinches when they try to steal the seeds of his lettuce and scorzonera.

## MUSHROOM GROWING ON A SMALL SCALE.

BY M. BELTOT.



HE MUSHROOM now occupies a sufficiently important place in the culinary art to require its presence in every well-stocked kitchen-garden. Not only is it an accessory serving to flavour all sorts of dishes; but it is the foundation of others most in esteem amongst *gourmets*. The culture is so simple and so easy that it is strange it is not more common. Perhaps not enough is known about it—a consideration which has induced us to pen this short paper.

The best position for a mushroom-bed is a dark place, where the temperature is always moderate and the light diffused—as a cellar, under or above ground, or a stable. Light hinders the growth of the cryptogam. Those who gather mushrooms in the fields, find that the harvest is always better on mornings after a dark night, than when the moon has been full and clear.

The first requisite is some good dung. Asses' dung is the best; that of horses and mules next. The latter being most easily procurable is most generally used. The larger the proportion of droppings and urine, and the shorter and more tangled the dung, the better. It is put in a heap, and watered to make it ferment; it is forked in layers about eight inches thick, of which four or five are laid one atop of the other. When it ferments, which is known by a whitish appearance in the interior of the heap, it is forked over again, so as to turn the outside portions within, and after ten days or so the operation is repeated. At the end of another week, the dung will have acquired a brown hue, and will then be ready for use.

The dung must be prepared in the open air before it is taken in where the bed is to be made. For it should be neither too wet nor too dry; that is to say, when a handful is taken up, the moisture should not run out of it, but it should be clammy and plastic, taking the shape of the hand like wet clay.

The bed may be formed against a wall; the dung being forked on lightly and evenly in layers of equal depth. It may be twenty inches broad and as many deep, and should have a slight slope.

If the place is paved, the bottom of the bed should be laid with ten or twelve inches of earth or clay, well rammed, to prevent the rats and mice from taking up their abode in it.

To fertilize the bed, it must be set with mushroom spawn. The spawn, or *mycelium*, is sold by seedsmen, and as it keeps a long time, can generally be procured in good condition. Small holes, two inches in diameter and depth, are made on the surface of the heap, quincunx fashion, at distances of six inches apart, in each of which a small piece of spawn of like diameter is inserted, covered over, and lightly pressed down.

A week later the spawn will be up, when it should be covered with some fine soil passed through a sieve. By turns, peat-earth, powdered charcoal, and powdered clay have been recommended for

the purpose. It matters little what the material is or whether it be fertilizing. What is of most importance is to add a little nitre, which actively promotes the formation of the mushrooms. The covering is then lightly patted down with the hand or a spade. From time to time the bed should be wetted, so as to keep it rather damp. Too much water would destroy the mushrooms.

A bed like this will quickly yield, and may be made to last five or six months.

In picking, care must be taken to twist off the mushrooms, so as not to disturb the bed or pull up the spawn from which they spring. If fresh spawn is wanted for other beds, all that is necessary is to leave the mushrooms that first make their appearance untouched; when the cap is well open, the spores are formed. Some days later, the surface portions of the bed which have become impregnated with the white filaments forming the spawn, are set aside, in a barn or cellar, in thin layers, where they will keep until required to form new beds.

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## THE WALNUT.

BY ALEXANDER M'KENZIE,

Alexandra Palace, Muswell Hill.



HERE is no tree more valued than the walnut, when it produces a good crop; and there is no tree that people treat with such complete indifference when it does not happen to gratify them with a bountiful harvest. In this respect it differs from other trees, and the difference is, to some extent, not a botanical or horticultural, but a moral question. When the apple-trees fail, we hear of it, for there is great anxiety; when the walnut-trees fail there is nothing said. And yet when the walnut bears a heavy crop there is great delight, and, as a matter of course, all who are interested in the culture of fruits and nuts would be glad if they could be shown how to insure an annual crop of walnuts, because of the annual joy that would accompany the result. Now to begin my story—which will be but a short one—I shall say that I will not undertake to give directions for insuring constant fruitfulness; but I will endeavour to direct attention to one frequent cause of failure.

The walnut is one of the most tender trees of the British sylvia, and a common cause of its barrenness is frost in the month of May. Now there are not many people see the truth by the light of this simple fact. If they would look at their walnut-trees at the end of May, supposing a frost had occurred about the 20th, they would find many of the young shoots as black as ink, and yet very soon after the trees might be as green and healthy-looking as could be desired. A tree may make fresh shoots after a pinch, but it will not produce a second crop of fruit. I have seen walnut-trees killed back every year for seven in succession, and then, escaping for a season, they have borne an abundance of nuts. It follows that when walnut-trees are planted, the question of climate should be considered, and if the

position is at all exposed to the east, or the level is low and damp, the driest, warmest, and most sheltered part of the property should be selected for them.

As regards soil, the walnut, like other of the large-growing timber trees, requires a deep, moist, fertile loam, but will grow on clay. But we sometimes find the walnut doing pretty well on poor soils, and therefore it has a claim to general consideration as a profitable tree. As a rule, the best way to begin walnut culture is to buy nice young nursery trees; but when any considerable number are required, the nuts should be planted where the trees are to stand. Sow in every station three or four nuts, and whichever of them takes the lead leave, and by degrees destroy or remove the others. When a poor soil is to be planted, prepare it by a good digging and manuring, and then plant nursery trees that have had the tap root removed.

One great advantage of growing walnuts in a private garden is that a fine sample of young nuts may be secured every year for pickling. This may seem but a small matter; but the fact is, you can always buy ripe nuts at a low price, but it is quite a rare event to see green nuts in the market young enough for pickling; they are invariably old and bony; but if you grow your own, you can gather them as young as you please.

As to sorts, the common form of *Juglans regia* is the best for general purposes. The very large kinds are handsome, but the quality is not generally good. There is a beautiful variety called the *Weeping walnut* that answers well for planting in a conspicuous position, as in the centre of a paddock or on the margin of a playground, for example.

The Welsh practice of making transverse incisions on the stems of young walnut-trees to hasten fruitfulness is of no use. It is a waste of time, and a disfigurement of the tree, which would come into bearing quite as soon without it.

## NOTES ON LATE GRAPES.

BY J. CALVERT CLARKE.



O properly finish off a crop of late grapes requires more time and attention than some amateurs and young gardeners can be persuaded to believe. It is therefore hoped that a few plain instructions, which I intend to give, will be useful.

First, let me say that unless all grapes are thoroughly ripened, they will not keep well, and the longer they are required to be kept, the earlier, to a certain extent, and better should they be ripened. No matter what the sort may be, if it is not well ripened it will not keep. The present season, so far, has been favourable to the ripening of grapes, and likely to reduce the cost of firing considerably, and every wise cultivator will make the most of the

sunshine, by adopting a careful system of ventilation, so that the grapes may derive all the benefit possible from the solar warmth. This may be done by shutting up early; that is to say, on bright sunny days not later than five p.m. Let the house remain so closed until nine p.m., and then admit a little air at the top, and this should remain on all night. It is astonishing what progress the grapes will make if a judicious system of utilizing the sunshine is carried out. Close the house earlier on dull days, and reduce the atmospheric moisture considerably as the grapes advance towards maturity. But until the dull days of October arrive, avoid a dry atmosphere, or an attack of red-spider will be the result. It is important to bear in mind that heat and air are alike necessary in the development of flavour and colour in grapes.

It may be well to warn the cultivator, that up to the time of writing this the season has been characterized by the smallness of the rainfall, and consequently vine borders are likely to suffer for the want of water. In our case we have been obliged to water all outside vine borders since the middle of May. We have given them a thorough soaking once every fortnight since, and our house of late grapes will receive the same attention until the end of August, should the weather continue dry. In the case of late grapes in districts similarly situated to ours, that have not been watered, I advise the watering of the borders without delay. Do not be satisfied with giving them a mere surface damping, for if the vines are to derive any benefit from the water, apply sufficient to penetrate the soil to the depth of ten to twelve inches. If at first it does not soak into the soil, freely loosen the surface with a fork, and extend the watering over a period of four or five hours, to give the water time to well moisten the border. After the watering, mulch the surface with half-rotten manure two or three inches thick. This mulching will materially lessen the amount of water required, as it prevents evaporation, and keeps the border in a uniform condition of moisture for a longer period. If the roots have previously been kept in a moist state, do not give them any more water after they begin to colour.

So much depends upon the time the crop will ripen, that general instructions only can be given for the management of the vines. If they were retarded in the early part of the season—a practice too common, and fraught with many evil consequences—they will require unremitting care and attention from this time until the grapes are ripe. The practice of keeping Muscat and other late grapes back in the early part of the season, under the supposition that they will keep better and hang longer, is wrong altogether. At the best our English summers are not long enough to mature a crop of Muscat grapes thoroughly without the assistance of fire-heat; therefore, to deprive them of an early start, so that they may not have the benefit of a long season of growth, is adding to the difficulties at the end of the season. Unless actually forced, Muscats and other long-keeping grapes do not ripen too early; that is to say, they are never ripe before the autumn, and they seldom ripen satisfactorily without fire-heat. I make a practice of starting

our Muscat house with a little fire-heat on the 1st of March, and although the district is favourable, I generally have to turn on the heat to finish off such varieties as Mrs. Pince's Muscat and Lady Downe's Seedling. This is done if it is found that they are not thoroughly ripe by the beginning of September. In the case of those started naturally it is advisable to apply fire-heat by the middle of August, for they keep best when they are ripe by the middle of September; and unless they are well ripened it is useless to attempt to keep them for any length of time. It may be well to remind the reader that all the thick-skinned black grapes are very deceiving in appearance. They frequently are so intensely black, and to the eye appear quite ripe, but on tasting them they will be found uneatable because of their sourness. When this is the case at the end of August, and it is desired to keep them through the winter, artificial heat must be applied in earnest when the external temperature is not sufficient to keep the house up to 85° by day and 65° by night. In some cases, where the vines were started late, the bunches may be thinned out, if too thick; unless all late-keeping grapes are rather thin, it is impossible to keep them free from damp.

To me it seems a great pity that late grapes are not held in higher esteem than they are at present. The fashion seems to be to devote any number of houses to the production of grapes, peaches, and melons, so as to produce a great bulk of fruit, and make a grand show for a month or two at the end of the summer, and then to be destitute the remaining part of the year. It is true I have no right to find fault if it suits the taste of others, but I cannot help saying I do not think the plan a good one; nor do I think that the most satisfactory results are obtained from the garden when such is the case. Some people suppose that a late house of grapes are a luxury belonging only to the wealthy, but such need not be the case.

As to the best varieties of late-keeping grapes, the choice is not extensive, but still there is sufficient for all practical purposes. Of white Muscat grapes, the *Muscat of Alexandria* still holds its own against all comers. Of black grapes which are thoroughly adapted for late keeping, I look upon the *Alicante* and *Mrs. Pince's Muscat* as decidedly the best; both are noble grapes when well finished, and as they may be kept until the month of April in good condition, we cannot desire anything better. On account of its better setting qualities, Mrs. Pince's Muscat is perhaps to be recommended in preference to the *Alicante* for those whose experience has not been extensive in this branch of gardening. In the hands of a master, and with the roots in an inside border, Lady Downe's Seedling is a desirable variety, as on account of its thick skin it will hang longer than the others where the conditions for keeping them are less favourable. But although it is a vigorous grower, I find in a rather heavy soil it is inclined to crack if the roots are exposed to all the autumn rains.

To keep late grapes in a satisfactory condition after they are ripe, a house must be entirely devoted to them, the atmosphere must be kept free from damp by a judicious system of ventilation, and



by the application of fire-heat two or three times a week. Do not keep the house closed on fine nights, but allow a steady current of air to pass through it by having a very little air on at top and bottom. Keep the temperature steady at about 42°, and frequently examine the bunches, and remove all decaying berries immediately they are seen.

## PROPAGATION OF BEDDING PLANTS.

BY WILLIAM BRADBURY.



**Q**UING to the cold weather which prevailed in the early part of the summer, and the great heat and drought experienced later on, the bedding plants in the majority of gardens have made such slow progress that it has not been practicable to commence the work of propagating a stock for next season so early as usual by a fortnight, because of the difficulty experienced in obtaining cuttings. The middle of August is, in ordinary seasons, a capital time to make a beginning with this work; but this year most satisfactory results may be insured by commencing as early as the growth, especially of the geraniums, is remarkably firm. There must now be no unnecessary delay, for there are many reasons why this work should not be deferred until the end of September, but it must suffice for the present to observe that the young growth is at that period so full of sap that the cuttings are difficult to strike, and also that plants raised from cuttings struck so late in the season are difficult to keep through the winter. Again, by commencing at once a few cuttings only need be taken from each bed, and by the time all in the flower garden have been cut from they can be gone over again, and the process can be repeated as often as necessary until the requisite quantity is obtained. If a due amount of care is exercised in taking off the cuttings, the plants in the beds will not show that they have been cut from.

**BEDDING GERANIUMS.**—The most general cause of failure in propagating bedding geraniums is over-attention. The cuttings are put thickly into pots, and then placed in a frame, shut up close, and sprinkled overhead once or twice daily, and the results of the system are the loss of about two-thirds of the cuttings from “damping off.” The best course, when the cuttings are struck in August, is to prepare them in the usual way, dibble them rather thickly together in a warm sunny border in the open air, and then either leave them alone until they are rooted, or at the most sprinkle them overhead about once a week. The simplest and a very desirable way of potting them up for the winter is to put three cuttings in a three-inch pot, and then they can be potted off singly some time in either February or March. In striking geraniums after the beginning of September put the cuttings in small pots, three in each, and place close together upon a bed of ashes in the open air. This plan saves



the labour of potting up the cuttings when rooted, but it is very seldom that such a large percentage will strike as when put out in the border.

VERBENAS, LOBELIAS, PETUNIAS, AND OTHER SOFT-WOODDED BEDDING PLANTS require the aid of a glass cover of some kind. The quickest plan to raise a stock would be to insert the cuttings in pots or pans in the usual way and partly plunge the latter in a mild bottom-heat. Although bottom-heat is not indispensable at this season of the year for striking cuttings, there can be no doubt that many subjects strike with a greater degree of certainty with its aid. I should not, however, advise my readers to trouble themselves about bottom-heat, for there is not a single plant used in garden decoration that cannot now be struck in a cold frame. The chief element of success in propagating verbenas and other plants of like character is to commence early, and, as the plants will not be potted off until spring, the cuttings should be inserted in five-inch pots, at the rate of about twenty to each. When in pots they will not suffer from overcrowding if the pots are placed at a reasonable distance apart. In the case of boxes and pans with from one to two hundred in each, it is simply impossible to prevent those in the centre from becoming drawn and weakened in constitution. This may appear a very unimportant point, yet it is really upon these minor matters that success in a large measure depends. The soft growing points of the shoots should be selected for cuttings, and these must be cut into lengths of two or three joints each.

The best way to prepare pots in which the cuttings are to remain all the winter, is to place about an inch of crocks in the bottom, then fill up to within an inch of the rim with moderately fine soil, and upon that place a layer of silver-sand about an inch in thickness. The soil and sand should be used in a moderately moist condition, to allow of its being pressed firm, and then all will be ready for the reception of the cuttings. These must be sprinkled overhead once a day at least, and shaded from the sun until they are well rooted. To prevent their damping off, or becoming infested with mildew, admit a little air to the frame, even when first put in, for a short time during the evening, to dry up all superfluous moisture; and after they begin to emit roots freely the lights should be left off altogether until the approach of frost renders the protection imperative. The great aim of the cultivator must be to keep the stock as hardy as possible, and, therefore, immediately the plants are rooted sufficiently the lights must be drawn off during the day, excepting in very wet or cold weather. The most desirable place for wintering the ordinary stock of bedders is undoubtedly a nice light airy greenhouse, but there can be no doubt that by propagating early and keeping the stock hardy, verbenas, petunias, and many other subjects can be safely wintered in a cold frame, provided they are protected from the frost. It is also important to prevent either mildew or aphid becoming established on the foliage, and the best remedy for the former is dusting the leaves with flowers of sulphur, and for the latter tobacco-powder is an infallible remedy. The tobacco-powder should be applied immediately after the plants

have been sprinkled overhead, and it must be washed off again within twenty-four hours afterwards.

COLEUS AND ALTERNANTHERAS should not be propagated unless there is a stove in which to winter them. They soon perish in a cold frame or greenhouse after the cold weather sets in.

GOLDEN FEATHER should be raised annually from seed, as the cuttings give so much trouble in pinching out the flower-buds; the middle or end of September will be quite early enough to sow the seed. It is quite hardy, but it is desirable to afford it the protection of a cold frame if possible.

CENTAUREAS.—The feathery *C. gymnocarpa* should be raised from seed if procurable, as the plants raised from cuttings generally produce flowers very freely, and are quite useless. *C. ragusina* does not flower so freely as the preceding, yet the cuttings are rather difficult to procure, and also to strike at this season of the year. This is a capital time for sowing seed of both sorts, as it will quickly vegetate, and if the stock is pricked off into small pots the plants will be of sufficient size to bed out next spring. These can also be wintered in a cold frame, as they are quite hardy, but liable to injury from damp if allowed to remain in the open air during the winter. Where it is determined to increase the stock by means of cuttings, the largest side-shoots must be taken off carefully close to the main stem; and after the tops of the largest leaves have been removed insert them in the border with the geraniums; but they must, however, have more attention. They must be shaded during the first week or ten days, and also be sprinkled overhead occasionally.

CALCEOLARIA cuttings should not be put in until the end of September, which will be quite early enough. A few degrees of frost will do them no harm, indeed, they are better without fire-heat. The simplest plan to manage the cuttings is to make up a bed of soil in a cold frame, and then dibble them rather thickly over the surface. They will require sprinkling overhead occasionally during the first month, but from thence until the following spring little or no water will be required. Sufficient moisture to keep the foliage fresh is all that is necessary, and if more is applied during the winter a very large proportion will perish. The frames should be covered with mats or litter during the frosty weather, and if the plants happen to become frozen the covering should remain on until they are thawed, to render the process as gradual as possible.

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BORONIA ELATIOR, a new and beautiful introduction to the greenhouse, has flowered freely in the cool houses at Kew. For a long time it was very attractive, from the rich magenta colour of the buds, which, as they expanded, changed to a pleasing pink. It offers a remarkable contrast in colour to the brown flowered *B. megastigma*, which it resembles in its graceful habit of growth. It is a native of King George's Sound, the Darling range, Wilson's Inlet, and the Franklin River, where it is supposed to form a tall shrub. The plants at Kew are about two feet high, and the branches bore flowers over nearly their entire length. The flowers are as large as those of *B. tetrandra*, a closely allied species, and the petals form a bell-shaped corolla.

THE BEST SPRING-FLOWERING BULBS FOR THE  
CONSERVATORY.

BY JOSEPH MACDONALD.



ONCE more the appearance of the bulb catalogues warns us that the season for the preparation for a display of flowers in spring is at hand. I fear, however, that a good many amateurs do not heed the warnings the trade lists convey sufficiently early to enable them to make the most of what is offered. In fact, I know it to be the case with many growers they have no idea of taking time by the forelock, and in vain does the bulb merchant make a request for the orders to be sent early. I have no reason to find fault if growers are satisfied with whatever results follow; but I have a perfect right to say that if they would take heed of the intimation given by the tradesman, a finer display would be the result of their labour. In the request of the merchant to send orders early, there may be an eye to business; but the nurseryman knows well enough that bulbs do not improve by being kept out of the ground. If we take Nature for our guide in this matter, we shall not go far astray. We all know that Nature's store-room is mother earth; and we may be well assured that when hyacinths and other bulbs are preserved by any other means—such, for example, as in drawers and paper bags—they are not placed under conditions most favourable for preserving them in the best manner possible. The only means of closely imitating Nature is to plant them as soon as possible in the autumn. The cultivator who does plant early will stand a much better chance than those who defer the work until a more advanced period.

To what extent bulbs are injured by being any length of time out of the ground, I shall not pretend to say; but we may be well-assured they are not improved by exposure to the air.

Next in importance to early planting, is a judicious selection of sorts. Hyacinths may be very properly placed first on the list of these, and I will at once state that the single varieties usually give the finest spikes of bloom. There are a few good double sorts which it is very desirable to grow, because they furnish colours which should be represented in every good collection.

In the following list I give the names of forty varieties which I have made a point of growing for our conservatory for several years past, and they are so thoroughly good that, although they are a trifle dearer than some other kinds, I can recommend them with every confidence:—

DOUBLE RED: *Baron Rothschild, Princess Royal, Waterloo, Lord Wellington, Frederick the Great, Regina Victoria.* DOUBLE WHITE: *Anna Maria, Heroine, Jenny Lind.* DOUBLE BLUE: *Blocksberg, Garrick, Laurens Koster.*

SINGLE RED: *Macaulay, Amy, Czar Nicholas, Victoria Alexandrina, Norma, Jenny Lind, Mrs. Beecher Stowe, Sir Henry Havelock.*

SINGLE WHITE: *Alba Maxima, Baroness Van Tuyll, Mozart, La*

*Candeur, Lady Franklin, Gigantea, Queen Victoria, Mont Blanc, Madame Van der Hoop, Queen of the Netherlands.* SINGLE BLUE : *Charles Dickens, General Lauriston, Grand Lilas, General Havelock, Marie, Baron Van Tuyll, Prince Albert, Grand Vidette, Lord Palmerston, Argus.*

If more than forty bulbs are wanted, duplicates of any of those named may be ordered. I have not mentioned any of the so-called yellow varieties, for at the best they are poor, indecisive things, and certainly not admissible in such a select collection as would be formed by the above-mentioned. The list should be made out at once, and sent to the seedsman. If the bulbs are potted in September, so much the better ; but they should be potted, at the latest, by the middle of October. In selecting hyacinths for vases, jardinetts, and pans, it is necessary to bear in mind that one variety in each receptacle produces the best effect. If these receptacles are filled with different varieties, the effect will, in all probability, be spoilt. When several bulbs of any one variety are put in each jardinet or pan, they may be depended upon to bloom together. But a pan containing a mixture, generally presents two or three flowers just at their best, some in a faded state, and others just coming into bloom.

The best way of growing the varieties named above is singly, in pots from five to six inches in diameter. Let the pots be clean and well drained. The best compost is prepared by incorporating mellow loam and well-rotted dung or leaf-soil, in equal parts, and then adding a fair sprinkling of sand. When potted, the bulb should be just under the surface, with the neck just visible. The colours should be put to each bulb if the full name is not attached, as then any number can be drawn from them for forcing or retarding, as the case may be, with the certainty of having a fair proportion of each colour. When all are potted, they ought to have a soaking of water if the soil in which they are potted is at all dry. If the soil is moderately moist, they will not require to be watered, as the moisture in the soil will suffice for them until they begin to grow. For the plunge bed, choose a shady spot beneath a north wall or fence, for the object now is to keep them cool for a few weeks. Let the bottom be made firm, or be covered with slates or tiles, to prevent the worms entering the pots. When the pots are placed close together on the hard surface, cover them all over with cocoa-nut fibre refuse, if it can be had, as it is cleanly and in every way the best plunging material that can be employed. If this refuse is not obtainable, spent tan or sifted cinder ashes may be substituted. Lay on sufficient to cover the pots to a depth of at least four inches, the object of the covering being to place a sufficient weight upon the bulbs to keep them firmly in the soil. If the bulbs are not covered when they begin to emit roots, they are sometimes raised a little out of the soil ; hence the importance of keeping the bulbs well down until the roots have obtained a firm hold of the soil. The length of time they may remain plunged depends upon the time they are wanted to flower. In every case they should remain so covered for six weeks, and if not wanted to flower before the end of

February and March, they may remain covered up until the middle of December.

When they are uncovered wash the pots and put them in a partially shaded pit or house for a few days, so that they may gradually get inured to the light. From this time their treatment must depend upon the time they are wanted in flower. If all goes on well with them, the pots will be full of roots in from six to eight weeks after potting. As they are taken from the plunge bed they may be at once put into a warm house to flower early, or be kept in the greenhouse to flower without forcing. If you really want hyacinths in the best possible condition they must not be forced, but be brought on gradually in the temperature of an ordinary greenhouse. With the aid afforded by a greenhouse temperature, they are generally at their best about the middle of March.

**POLYANTHUS NARCISSUS.**—The *Polyanthus Narcissus* constitutes a showy and useful spring flower, which for the decoration of the conservatory is most valuable.

The best white varieties are *Paper White* for early bloom, and *Grand Monarque* for later flowering. The best yellow flowered variety is *Newton*, a rather new kind. *Lord Canning* and *Soliel d'Or* are also good. Those partial to the double varieties should grow *Van Sion*. Before potting sort the bulbs into two sizes, large and small, place three of the largest bulbs into seven-inch pots, and the same number of the smaller size into six-inch pots. Use a compost prepared as recommended for hyacinths. When potted place them in a cold pit or frame, and keep them rather dark until they show signs of growth. Until that time they will want but little water. Before frost sets in remove them to the greenhouse. Like the hyacinths they flower much the best when allowed to remain in a cool pit after their removal from the plunge bed. As they come into flower they may be removed to the conservatory.

**DOUBLE TULIPS.**—With the same system of management as advised for the narcissus, all tulips may be grown satisfactorily. The best double tulips for flowering in pots are *Gloria Mundi*, *La Candeur*, *Rex Rubrorum*, *Titian*, and *Tournesol*. In potting tulips place three bulbs of each sort in a six-inch pot, and when removed to the pit or frame as recommended for narcissus, keep a sharp look out for mice, as they are particularly partial to the bulbs.

**SINGLE TULIPS.**—The single tulips are, when well grown, very beautiful, and more especially so when intermixed with other spring flowers. The best are *Claremont*, bright scarlet, striped with golden yellow; *Belle Alliance*, bright crimson; *Keizerskroon*, yellow and red; *Standard Royal*, white and rose; *Vermilion Brilliant*, scarlet; *Vander-neer*, dark violet. The *Pottebakker* varieties are not equal in quality to the above, although they are very often grown in preference to them. They are certainly very showy, and will bear forcing better than some others, which perhaps accounts for the position they occupy in the public taste.

It may be well to remark, that besides those here named, there are a considerable number of good varieties, so that the list may be extended considerably, without including second-rate kinds. I

have refrained from giving a long list, because I would much rather name only such as I know to be first-class, and I would advise the amateur to grow several bulbs of each of the really good kinds, rather than to have a long list of varieties, which must of necessity include some that are not so good as could be wished.

## SELECT BEDDING PLANTS.

BY JOHN WALSH.



EXPERIENCED cultivators usually commence the work of propagating the stock of bedding plants required for the following season's display about the middle of August, and in so doing they act wisely. By making a beginning thus early they have a longer period in which to complete the work, and consequently it is not necessary to take such a large number of cuttings at any one time to disfigure the beds. They have, moreover, less difficulty in striking the cuttings of some of the things; and if a failure occurs with any of the batches inserted early, it is practicable to put in a second lot. Nevertheless, it must be said that all the plants employed in the embellishment of the flower garden during the summer season may be most successfully propagated during September. In proof of this assertion, it will suffice to point to the fact that, in many gardens in which the annual display is most satisfactory, not a single cutting is taken until after the first of the month last-mentioned. Certainly, those who have not yet commenced may now make a beginning with the full assurance of success, and there is plenty of time to procure and strike cuttings of any of the bedders that will be mentioned in the course of this communication.

Without further preface, I will now proceed to make a few remarks upon the bedders grown for their flowers now most popular in gardens, and in so doing shall point out a few of the very best in the several classes. There are but few novelties to report upon; but some of the zonal pelargoniums, which are as yet but little known, are so thoroughly good that they must have special attention directed to them.

ZONAL PELARGONIUMS well deserve to have first place, for they undoubtedly form the most thoroughly useful class of bedders we have. They are easy to propagate, not difficult to keep through the winter, and they can be invariably depended upon for producing a satisfactory display. For gardens of moderate extent, I should recommend from twelve to fifteen varieties, because with a number less than twelve it is impossible to have all the finest shades of colour represented. If, however, one-third of that number is sufficient, I should recommend:—*Anna Pfitzer*, orange scarlet; *Vesuvius*, brilliant scarlet, well-known for its dwarf habit and floriferous character; *Bonfire*, crimson nosegay—the best of all the *Stella* type; and *Mrs. Holden*, rose-pink—a rather strong growing

variety, producing a profusion of large trusses. Here we have the finest varieties in the most useful colours. The other varieties that I would recommend as being especially desirable are :—*Corsair*, deep rich scarlet, flowers of good form, very freely produced, well adapted also for pot culture ; *Ernest*, brilliant scarlet, the plant robust, and the flowers produced in immense trusses ; *Gloire de Corbeny*, a well-known variety, with salmon coloured flowers, which still sustains its supremacy as the best in its line of colour for bedding ; *H. R. Clifton*, rich crimson, the flowers produced in magnificent trusses ; *Mrs. Fytche*, rose-pink, robust and free ; *Mrs. Gibbons*, deep rose with purplish shade, the flowers are borne in noble trusses ; *Mrs. Hetley*, soft rosy scarlet, is in the way of *Lucius*, but it quite surpasses that fine old variety in flowering more freely and by its more effective colour ; *Mrs. Mellow*, a fine, free-growing variety, producing its rich crimson flowers in the most profuse manner possible ; *Mrs. Turner*, deep rose, the trusses large and freely produced ; *Shakespeare*, deep red-crimson, a grand nosegay for bedding ; and *White Clipper*, pure white, one of the best of its class for bedding, although not so good as could be wished.

PELARGONIUMS WITH VARIEGATED LEAFAGE are well-known for their usefulness in the formation of marginal bands and divisional lines. There is now a large number of varieties in the catalogues ; but I should not advise amateurs to burden themselves with more than a few of the most distinct. The best of the Golden Zonals for bedding are :—*Macbeth*, *E. R. Benyon*, and *Peter Greive*. All these are moderately vigorous, and rich in leaf-colouring. Of the Silver Zonals, I should recommend :—*Lass o' Gowrie*, *Mrs. Laing*, and *Silver Flute*. The Bronze Zonals are most useful for medium sized beds, and broad bands, and the best are :—*Black Douglas*, *Crown Prince*, *Golden Harry Hieover* (the best of the section for edging small beds), *Waltham Bronze*, and *W. E. Gumbleton*. Some of the Yellow Leaved varieties are even more valuable than the Bronze Zonals, and *Creed's Seedling*, *Crystal Palace Gem*, and *Robert Fish* are the best. The first and last of this trio flower most abundantly, and as the colour of the blooms is a most brilliant scarlet, they are very effective. The other variety should have the flowers removed.

PETUNIAS make a grand display of colour, and as they do not suffer from drought as the majority of other plants, they well deserve to be grown extensively. The best six for bedding are :—*Attraction*, crimson ; *Canard*, white ; *Gloire de Nancy*, double purple ; *Jules Menoreau*, double maroon ; *King of Crimson*s, double crimson ; *Shrubland Rose*, rose ; *Spitfire*, deep crimson.

LOBELIAS should invariably be propagated by means of cuttings for the purpose of ensuring uniformity in the growth of the plants, and in the colour of the flowers. The three best of the varieties of the same type as *Speciosa* are :—*Blue King*, light blue ; *Blue Beauty*, rich blue ; and *Blue Stone*, deep purplish blue. These are all compact in growth, and have large flowers. *Lustrous* is rather dwarfer in growth than the preceding, and has deep blue flowers with large white eye. *Omen* is similar in growth to the last, but has flowers of a purplish-lilac colour, and is especially valuable for its distinct-



ness. The *Pumila* varieties are not desirable in small gardens, as they frequently die off early in August, and spoil the general effect.

**HELIOTROPIUMS** form good beds, and are useful for planting in the mixed border for the sake of their fragrance. The best for planting out are :—*Heloise Delesalle*, lavender blue ; *Jersey Blue*, deep blue ; *Mons. Hamaitre*, purple-blue ; and *Surpassé Guascoi*, lilac.

**AGERATUMS**.—The best of these is unquestionably *Imperial Dwarf*, the whole stock of which should be struck in the autumn, as the plants bloom earlier than when the cuttings are struck in the spring.

**CALCEOLARIAS**, although liable to perish at a very critical period during the summer, cannot yet be discarded. The two best and most reliable are, undoubtedly, *Golden Gem* and *Pillar of Gold*, both of which have bright yellow flowers.

**VERBENAS**.—The best of my collection, which comprises the majority of the new and old kinds worth growing are as follows :—*Basilisk*, scarlet, compact habit ; *Crimson King*, crimson-scarlet, capital habit ; *Ganymede*, clear scarlet ; *Géant des Bataillés*, crimson, a fine old variety *Le Grand Boule de Neige*, the best white ; *Nemesis*, crimson-scarlet ; *Pink Queen*, best pink ; *Purple King*, purple-blue, free and fine.

## NEW POTATOES IN VICTORIA, AUSTRALIA.

BY JOHN G. WILSON, MELBOURNE.



THE Horticultural Society of Victoria have lately been importing a number of new potatoes from England and America, and the results so far have been most satisfactory. These new varieties are first placed on trial in the Society's Gardens (which are under the very able superintendence of Mr. G. Neilson), and those which are proved to be decided acquisitions are distributed amongst the members of the Society. Amongst others which have been already distributed may be mentioned *American Early Rose*, which is very early, a good cropper, and of very fair flavour, but not so good as another American variety, the name of which was lost, but probably the *American Late Rose*, for it closely resembles the *Early Rose*.

*Snow-flake* is a very fine flavoured potato, very early, but a medium cropper. *Handworth's Frame* is very good in all respects, as also are *Golden Gem*, *Telegraph*, *Willard*, *Cottager's Red Kidney*, *Scotch Blue*, *Trout Kidney*, and *Sutton's Berkshire Kidney*. The best cropper of all the newest kinds is *Sutton's Redskin Flourball*, a very large and rather coarse potato. It is not quite equal in flavour to some of the others, unless grown in light, sandy soil. Potatoes here are generally free from disease, and two crops may always be obtained in the year under good management.



## THE GARDEN GUIDE FOR SEPTEMBER.

THE dew is on the summer's greenest grass,  
 Through which the modest daisy, blushing, peeps;  
 The gentle wind, that like a ghost doth pass,  
 A waving shadow on the cornfield keeps;  
 But I, who love them all, shall never be  
 Again among the woods, or on the moorland lea!  
 The sun shines sweetly—sweeter may it shine!—  
 Blessed is the brightness of a summer day;  
 It cheers lone hearts: and why should I repine,  
 Although among green fields I cannot stray?  
 Woods! I have grown, since last I heard you wave,  
 Familiar with death, and neighbour to the grave.  
 These words have shaken mighty human souls—  
 Like a sepulchre's echo drear they sound—  
 E'en as the owl's wild whoop at midnight rolls  
 The ivied remnants of old ruins round.  
 Yet wherefore tremble? Can the soul decay?  
 Or that which thinks and feels in aught e'er fade away?  
 Are there not aspirations in each heart  
 After a better, brighter world than this?  
 Longings for beings nobler in each part—  
 Things more exalted—steeped in deeper bliss?  
 Who gave us these? What are they? Soul, in thee  
 The bud is budding now for immortality!

ROBERT NICOLL.

## FLOWER GARDEN.

One of the finest of the September garden flowers is *Anemone vitifolia* *Honorine Jobert*, which is alike remarkable for its free growth and great beauty. Some of the Michaelmas daisies will bloom during the month, notably *Aster dumosus* and *Aster horizontalis*. Other good plants that will bloom during the month are: *Campanula persicifolia*, *Dianthus hybridus multiflorus*, *Delphinium amœnum*, *Helianthus multiflorus*, *Eucomis undulata*, *Lilium lancifolium*, *Lilium lancifolium album*, and *Lilium tigrinum*. Layers and pipings of carnations, pinks, and picotees must be planted as soon as they are well rooted. Select an open situation, and dig the ground up deeply before planting. Divide and replant daisies and polyanthus for spring bedding, if not already done. Support dahlias with stakes as it becomes necessary, and protect from earwigs by setting traps. Fill a few small pots with moss, and turn them bottom upwards upon the stakes used in supporting the branches. Seedling herbaceous plants ought to be strong by this time, and ready for planting out; but there is yet time for sowing seed if still undone. Transplant evergreens, and propagate either by cuttings or layers. Ivy and box edgings may be made. Complete the propagation of the stock of bedding plants as quickly as possible.

## KITCHEN GARDEN.

Plant out a good breadth of the green, curled, and broad-leaved Batavian endive, and brown cos and drumhead cabbage lettuce, for the winter. Tie up for blanching those sufficiently advanced. Take up and store potatoes and onions. Sow chervil, corn salad, and radishes for a late supply. Earth-up celery and leeks, selecting a dry day for that purpose. Make an elevated bed for the reception of a frame to receive the cauliflower plants to stand over the winter. Plant out the main crop of cabbage for spring use at a distance of two feet apart, and insert a strong colewort plant between each four, to draw during the winter. Thin the winter crop of turnips to the proper distance apart, and the spinach slightly, if too thick. Hoe the ground between the rows to destroy every vestige of weed before it has time to seed, and thus render it unnecessary to tread the ground when in a soft state from the autumn rains.

## FRUIT GARDEN.

Early apples and pears must be gathered as soon as the stalk parts readily from the tree, and placed in the fruit room until fit for the table. Fresh plantations of strawberries may still be made with a considerable chance of success, but such heavy crops of fruit must not be expected as from those planted early last month.

September.

## GREENHOUSE AND CONSERVATORY.

Heaths, Epacris, Chorozeas, etc., must soon have the shelter of the greenhouse or pit. Give the structures intended for their winter quarters a thorough cleansing, and whitewash the walls with hot lime previously to bringing the plants indoors. Pay particular attention to the roots with respect to moisture; for, whilst guarding against keeping them too wet, see that they do not suffer from drought. Shift on cinerarias, calceolarias, and primulas as the case demands. Those intended for early flowering must be put into their flowering-pots at once, if they have not yet received their final shift. Place fuchsias, as they go out of flower, outside for a week or ten days, to insure the wood being well matured before packing them away for the winter.

## VINERY.

Give all the air possible to vines from which the crop has been gathered, and keep the atmosphere dry in houses in which the grapes are hanging. Those just colouring also require plenty of air, even if artificial warmth is required to maintain the proper temperature.

## STOVE.

The majority of the summer-flowering occupants of this structure have now completed their growth, and require more light and air, and less warmth than they have been receiving lately. They should, therefore, be placed in the coolest end of the house; and winter-flowering subjects, such as gesneras, justicias, poinsettias, thyracanthus, etc., must have every encouragement to make good growth before the light declines too much. Orchidaceous plants must also have free exposure to the light, to effect a thorough maturation of the newly-made pseudo-bulbs.

## HORTICULTURAL AFFAIRS.



THE HORTICULTURAL EXHIBITIONS of the past month were confined exclusively to the provinces, and although they were mostly of a highly satisfactory character, they were not characterized by any striking speciality, and it is not, therefore, necessary for us to speak of them in detail.

THE MEETING OF THE ROYAL HORTICULTURAL SOCIETY on August 2, to consider the financial position of the Society, resulted in the adoption of a resolution, moved and seconded by the Hon. C. S. Butler and Mr. Shirley Hibberd, advising the Council to make the best arrangements in their power to effect a complete separation of the Society from Her Majesty's Commissioners, and to dissolve the connection with South Kensington. Lord Aberdare, the president, explained to the meeting that all processes of patchwork and accommodation had failed, and he, indeed, went so far as to suggest that the only course to be pursued, and the course which the Council believed to be expedient, was that which the resolution was intended to promote.

THE LONDON PARKS are now remarkably gay with bedding plants, and a capital opportunity is afforded those who take special interest in flower-garden embellishments for becoming acquainted with the various styles of bedding now obtaining attention. In Hyde Park, the display consists chiefly of flowering plants, and in the arrangements alongside of Park-lane, all the best of the zonal pelargoniums are well represented. There are also several very beautiful carpet beds in this part of the park. The chief feature of the display in Victoria Park, is the splendid examples of carpet bedding by the side of the road between the Crown and Royal Hotels, and by the side of the walk which skirts the western side of the great lake. The "subtropical" garden still forms the chief attraction in Battersea Park, for therein are represented all the best plants with ornamental leafage which are suitable for the decoration of the flower garden during the summer season. In Finsbury Park, the bedding display, although more limited in extent than in the other parks mentioned, is exceedingly good, and well worthy of inspection. At the Crystal Palace, the bedding display is just now a source of great attraction, for the beds on the rose mount and the principal terrace, which have been planted with great taste, are now in perfection. In the Royal Botanic Gardens at Kew, and in the gardens of Hampton Court Palace, there are most extensive and attractive displays.

THE LOWER GROUNDS, ASTON PARK, BIRMINGHAM, are this season unusually gay with bedding plants, and present some superb examples of carpet bedding.

THE ROYAL BOTANIC GARDENS, KEW, were, on the occasion of the Bank Holiday, on Monday, Aug. 7, visited by 64,613 persons—the largest number that has yet passed through the gates in one day.

THE CATALOGUE OF LILIES issued by Messrs. Krelage and Son, of Haarlem, is remarkable for its completeness, and will be found of great service to cultivators desirous of forming collections of these beautiful flowers.

MR. H. CANNELL, OF SWANLEY, KENT, forwarded us, a few days since, a boxful of seedling petunias and fuchsias of the most sumptuous character. To describe them is simply impossible, and perhaps the best we can do is to recommend those who are interested in such things to run down to Swanley to see and judge for themselves. We have certainly never seen a finer lot of petunias and fuchsias than we now have before us, and we have seen some good things in our time.

MESSRS. SUTTON AND SONS, OF READING, have recently taken into partnership Mr. Arthur W. Sutton, who has long been actively engaged in the seed-growing department of their business.

GLORIOSA SUPERBA, which has long been known in this country as a stove plant, is, according to Mr. Thomas Short, quite hardy, and succeeds if planted in light rich sandy soil, in a dry situation—at the foot of a wall or on rockwork, perfect drainage being indispensable. A few ashes or fern placed over the stations occupied by the plants is said to be of service in severe winters.

THE PERSIAN'S LOVE FOR FLOWERS.—“Very beautiful is the Persian's love for flowers,” writes Dr. George Birdwood, in the *Athenæum*. “In Bombay I found the Parsees use the Victoria Gardens chiefly to walk in, ‘to eat the air,’—‘to take a constitutional,’ as we say. Their enjoyment of it was heartily animal. The Hindu would stroll unsteadfastly through it, attracted from flower to flower, not by its form or colour, but its scent. He would pass from plant to plant, snatching at the flowers and crushing them between his fingers, and taking stray sniffs at the ends of his fingers as if he were taking snuff. His pleasure in the flowers was utterly sensual. Presently, a true Persian, in flowing robe of blue, and on his head his sheep-skin hat—

‘Black, glossy, curl'd, the fleece of Kara-Kul,’

would saunter in, and stand and meditate over every flower he saw, and always as if half in vision. And when at last the vision was fulfilled, and the ideal flower he was seeking found, he would spread his mat and sit before it until the setting of the sun, and then pray before it, and fold up his mat again and go home. And the next night, and night after night, until that particular flower faded away, he would return to it, and bring his friends in ever increasing troops to it, and sit and sing and play the guitar or lute before it, and they would altogether pray there, and after prayer still sit before it, sipping sherbet and talking the most hilarious and shocking scandal, late into the moonlight: and so again and again every evening until the flower died. Sometimes, by way of a grand *finale*, the whole company would suddenly rise before the flower and serenade it, together with an ode from Hafiz, and depart.”

THE STORM OF JULY 23.—On the evening of Sunday the 23rd of July, a terrible storm of hail occurred in the eastern and northern suburbs of London. Every kind of glass, whether windows, hothouses, photographers' studios, and such like, facing north and west, suffered wreck more or less complete; and all kinds of crops, flowers, fruits, and vegetables were so completely destroyed, that in some cases it was a difficult matter to determine how some plots of land had been occupied previous to the disaster. Gardeners and florists were the principal sufferers, and in many cases their losses are simply ruinous. A committee was formed for the purpose of raising a relief fund. The chairman, Mr. John Fraser, of Lea-bridge-road, appeals to the public at large for the means of alleviating the distresses of those amongst the sufferers who are least able to bear the loss. We are assured that ten thousand pounds would not cover the damage done. The committee propose to raise four thousand; and towards this they have obtained only five hundred pounds up to this time. Subscriptions may be forwarded to the treasurer, Mr. Shirley Hibberd, Bridge House, Stoke Newington, or to any of the branches of the London and County Bank.

September.

## SEPTEMBER EXHIBITIONS.

- 4 AND 5.—LEA BRIDGE HORTICULTURAL SOCIETY.—*Annual Exhibition.*  
 6.—ROYAL HORTICULTURAL SOCIETY.—*Fruit and Floral Committees, 11 a.m.; General Meeting, 3 p.m.*  
 9.—DUNDEE HORTICULTURAL SOCIETY.—*International Horticultural Exhibition.*  
 11.—ROYAL OXFORDSHIRE HORTICULTURAL SOCIETY.—*Autumn Exhibition.*  
 12.—LEE AND BLACKHEATH HORTICULTURAL SOCIETY.—*Autumn Show.*  
 12 AND 13.—GLASGOW AND WEST OF SCOTLAND HORTICULTURAL SOCIETY.—*Autumn Exhibition.*  
 13.—ROYAL CALEDONIAN HORTICULTURAL SOCIETY.—*Autumn Exhibition.*  
 14.—KILMARNOCK HORTICULTURAL SOCIETY.—*Autumn Exhibition.*  
 28.—WOOLHOPE CLUB DAY, at Hereford.  
 28 AND 29.—ALEXANDRA PALACE, MUSWELL HILL.—*International Exhibition of Potatoes.*

## TO CORRESPONDENTS.

*G. G., jun., Stockport.*—You will experience considerable difficulty in wintering the plants mentioned in your letter in windows facing the north. They not only require protection from frost, but, during the winter season, they require an abundance of light. They ought also to enjoy all the advantages resulting from full exposure to the small amount of sunshine experienced during that dull season. If you make the attempt to preserve the plants in the windows, you must, early in September, place them in a sunny position, where they can remain until danger from frost is apprehended, and water them very sparingly. They should, indeed, have no more water than is really necessary to prevent the leaves flagging, and to ensure the thorough hardening of the growth by the time the plants are taken indoors. During the winter they must be kept as dry as possible, because of the risk of their damping off. Zonal pelargoniums should be kept quite dry, for they will take no harm if they do not receive a drop of water from October until the following March, provided the wood is rather hard.

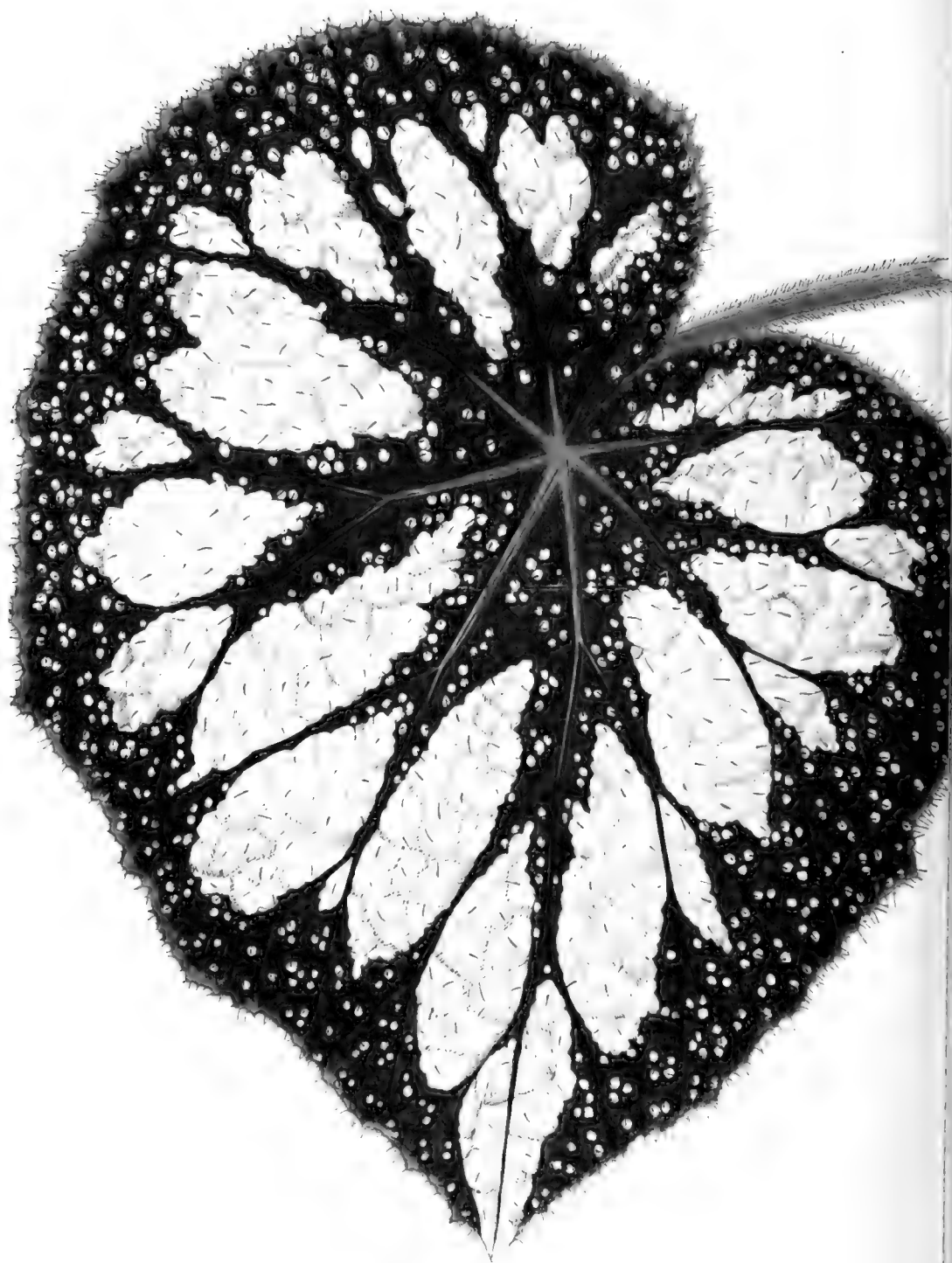
FERN FOR VASE.—*R. W.*—As a companion plant to the one mentioned in your letter, we can recommend *Davallia dissecta*, a species of great beauty.

HEDGES FOR SHELTER.—*Badanloch, Sutherlandshire.*—One of the very best plants for hedges for shelter is the American Arbor vitæ, which is generally entered in the trade catalogues as *Thuja occidentalis*. It is comparatively cheap, very quick in growth, thoroughly hardy, and bears clipping well. Stout bushy plants, about three feet in height, and costing from 25s. to 30s. per hundred, will, if planted rather close together, soon form a hedge sufficiently dense to afford efficient shelter to the occupants of the intervening quarters from the roughest winds. When the hedges are formed the plants should all have the tops taken off to encourage the production of side-shoots, and to make them of the same height. Afterwards, the hedges will require an annual clipping to maintain a uniform height and thickness. The common Evergreen Privet also makes an excellent hedge, although not equal to one formed with the American Arbor vitæ.

PEACH TREE.—*G. P.*—To successfully cultivate the peach tree out-of-doors, a wall having a south, east, or west aspect is essential. The tree must be planted a few inches from the wall, and the branches trained to it. In training the trees, spread out the branches in the form of a fan, and nail them to the wall at a distance of about six inches apart. The fruit is produced on shoots of the previous season's growth, and at the winter pruning those shoots selected for fruit bearing must be shortened back to about one-third of their length only, and the remaining young shoots should be cut back to the first or second bud, for the purpose of furnishing a supply of young wood, to eventually take the place of that left for fruit-bearing. In the course of the summer, all the new growths upon the bearing shoots must be removed with the exception of two to each shoot, one at the base and one at the point, and these must be laid in their full length.

ROSES.—*G. P.*—Roses should not, as a rule, be pruned before the middle of March, because when pruned earlier there is a great risk of the young shoots being cut off by spring frosts.





GECONIA REY.-I. PULO A.

## ORNAMENTAL-LEAVED BEGONIAS.

BY GEORGE GORDON.

*(With Coloured Illustration of Begonia Rex v. nebulosa.)*

**B**EGONIAS with ornamental leafage constitute a most useful class of stove-plants, and in many respects are especially suited to the requirements of the amateur. They are all bold in habit, handsome in appearance, and distinct in character, and, what is of equal importance, they are by no means difficult of cultivation. Indeed, few plants that have a place in the stove can be grown successfully with so little trouble, for after the annual repotting, early in the spring, they require no attention beyond the regular supplies of water. They succeed admirably in ferneries under glass, and their bold, massive leaves form such a striking contrast to the light, elegant fronds of the ferns that a moderate number of specimens should invariably have a place in the indoor fernery; they are also useful for conservatory decoration, for, although they require a brisk temperature at certain stages of growth, they can be kept in the greenhouse or conservatory throughout the summer without injury to them. There is yet another purpose for which they are well adapted, and that is the decoration of indoor apartments; they are not suitable for placing upon the dinner table, but they present a most attractive appearance upon the sideboard, and, when placed in any suitable position, in the drawing-room.

The begonias with beautiful foliage are mostly natives of the West Indies, South America, and Mexico, and the species *B. Rex*, from which the beautiful variety here figured was raised, was introduced into this country in 1857 by Messrs. Rollisson, of Tooting. Several species with variegated leaves had been in cultivation many years previous to the introduction of the species here mentioned, but they were all so inferior in every way that when it made its appearance it excited much interest, and for many years afterwards it enjoyed a large share of popularity. In the course of a few years Messrs. Rollisson and others turned their attention to the raising of seedlings, and the result was a race of hybrids of great beauty, and, in many instances, surpassing in attractiveness the specific forms. The raising of seedlings has been continued until quite recently by cultivators who take a special interest in them, and we have now in the catalogues not less than twenty beautiful varieties. To raise a stock from seed is a very easy matter when a few plants are at hand to furnish a supply of seed. The flowers, which are not, comparatively speaking, very attractive, are produced freely upon old plants, and if they are fertilized with the pollen from other flowers a plentiful supply of seed will be the result. The seed ripens rather slowly, and when it is quite ripe the appearance of the pods will afford abundant evidence of the fact. It is very fine, and should be sown thinly in a shallow pan filled with a mixture of

fine soil, leaf-mould, and silver sand in about equal proportion, and for covering it there is perhaps nothing better than a sprinkling of silver sand. If the pans are placed in a warm corner of the plant stove, in a propagating pit or in a cucumber frame, and the soil maintained in a nice moist condition, the seedlings will not be long in making their appearance, and in due course may be potted off separately. But as they move well when of a comparatively large size, it is not desirable to disturb them before they are large enough to be handled conveniently.

As yet but little has been done to improve the quality of the flowers of the variegated begonias, and it is worth considering whether a race having beautiful foliage and large handsome flowers may not be originated by the intercrossing of those comprising the section to which especial reference is here made, and the finest of those grown for their flowers.

These plants may also be multiplied with extreme rapidity by manipulating the leaves. In propagating, when the supply of leaves is abundant, remove them from the plant, shorten the stalks to about two inches, and then reduce the size of the leaves by taking two or three inches off all round them; they should then be inserted round the sides of five or six-inch pots, or singly in small sixties; when put several together, they should be inserted so that they do not project over the edge of the pot, and in every case they must be inserted deep enough for the base to rest upon the sand. If, however, it is desired to obtain several plants from one leaf, take them as before advised, and put each leaf separately in six-inch pots, without its undergoing any trimming whatever previously; insert the stalk on one side of the pot and then peg the whole of the leaf close down upon the sand, and in the course of a short time young plants will be produced over the entire surface; they mostly make their appearance where the leaf has been punctured by thrusting the pegs through them, and sometimes as many as twelve plants may be had from a single leaf.

They grow with extreme rapidity if shifted on freely, but unless required for exhibition purposes very large specimens are not desirable. Plants in five-inch pots will be found most useful for indoor decorations, and in eight and nine-inch pots for the embellishment of the conservatory and stove. During the earlier stages of their existence they may be shifted on freely as may appear desirable, but after they reach to pots five inches in diameter an annual repotting will suffice, and the best time for doing this is early in the year before they commence to make new growth. By keeping them rather pot-bound, the variegation is more fully developed and a much firmer growth is secured. Until the plants reach the largest-sized pot here mentioned, they should at each shift be put into pots one size larger than those previously occupied. Afterwards they can be kept in the most excellent health for an indefinite number of years by a very simple course of procedure. At the annual repotting, instead of transferring them to larger pots, reduce the ball two to three inches all round, and then return them to pots, perfectly clean, and of the same size as those



previously occupied. In the matter of soil, it will suffice to say that a compost in every way suited to their requirements is prepared with equal parts turfy loam, fibrous peat, and leaf-mould, and a liberal proportion of sharp silver sand. After the potting is completed place them in the stove, or wherever they can enjoy the advantages of a temperature of about seventy degrees, and as soon as they commence to grow freely, supply liberally with water. With the aid of a cucumber frame and an ordinary greenhouse these plants can be grown very successfully. When the hotbed is made up the begonias can be started, and by the time the cucumber plants begin to extend over the frame, they can be removed to the greenhouse, where they can remain until the following spring. They can be wintered safely in a greenhouse provided they are kept quite dry at the roots. Those in the stove should be maintained in full growth throughout the winter, for they contribute much to the interest and attractiveness of that structure during the dull season; but when they remain in the greenhouse from October until March, they will perish if the soil is kept otherwise than quite dry.

The most distinct and desirable for a small collection are, *Begonia dædalea*, *B. grandis*, *B. Griffithi*, *B. imperialis*, *B. Marshalli*, *B. Rex*, *B. nebulosa*, and *B. Rollissoni*.

## THE FERTILIZING AND HYBRIDIZING OF AROIDS.

BY M. A. DE LA DEVANSAGE.



**F**ERTILIZATION is one of the most important processes in the propagation of plants. Means the most varied are provided by Nature—by the intervention of insect agency or by the hand of man; which last, by lending seasonable aid, oftentimes becomes creative, thanks to the manifold combinations resulting from crossing.

The family of aroids possesses a very high interest in connection with the study of cross-fertilization, which is effected sometimes *directly*, sometimes *indirectly*.

*Arum muscivorum* is a good example of fertilization by insect agency. Its unisexual flowers are borne on a single spadix, the male flowers on the upper part, the female below, the whole being enclosed in a broad spathe, the interior of which is furnished with long hairs turned towards the bottom of the tube. As the flower is shielded from the winds and the approach of insects by this protective arrangement, there would be no means by which the pollen could reach the female flowers when they open but for the flies which, attracted by the odour of decaying meat emitted by this plant during blossom, enter the spathe and are caught in the hairs. Moving to and fro over the spadix in their efforts to escape, they carry down the pollen to the lower portion of the flower, which so becomes fertilized, and forthwith produces fruit and seed. Now, this shows us exactly what should be done by growers desirous of obtaining seed for new varieties of aroids. For although these

plants are not of much account for decorative purposes in Europe, they attain to great beauty in tropical countries, whence numerous importations have lately been received in our hothouses.

For a dozen years past, aroids, in the shape of *Alocasias*, *Colocasias*, *Caladiums*, *Anthuriums*, and *Philodendrons*, have been in high esteem amongst admirers of hothouse plants. Naturally, the possibility of improving them soon suggested itself to those who knew the secret of their culture, and knew, too, the profit to be made by introducing new varieties. A Frenchman, M. Bleu, was the first who discovered a means of surpassing nature by modifying the type and colours of the variety of *Caladium* known as *E'Amazone*, which was sent out by M. Chantin in 1858.

When first they appeared, these varieties created a great sensation amongst connoisseurs. Now perfection has been very nearly attained, and to modify the varieties already in existence, it would probably be necessary for M. Bleu to originate a new strain with his *Hybrid Caladium* with pure, transparent, white, parchment-like leaves. Abroad, it has been at Vienna more particularly that aroids have been made the subject of scientific study. An article contributed to the *Gardener's Chronicle* by M. Karl Koch, contains some useful information in point, which it may be well to analyse.

It was at Erfurt, about fifteen years ago, that M. Kellermann exhibited the first aroids in bloom. The exhibition was of great interest both to botanists and florists. M. Kellermann had worked from 1850 to 1860 under Schott, who was at that time director-general of the Imperial Gardens at Schonbrunn. He it was that formed the famous collection of more than four hundred aroids, which became the basis of his subsequent labours. The study of these numerous varieties suggested to M. Kellermann the idea of devoting them to experiments in cross-fertilization. I have already mentioned a singular fact relative to the fertilization of *Arum muscivorum*. It should be observed that *Caladium odorum* is also fertilized in the ordinary way. Every year I get a crop of fertile seeds from it, which ripen perfectly in the temperate-house.

Now, regarding M. Koch's theory of the matter. Aroids, let it be observed, as a rule are not self-fertilized. The flowers on the spadix require impregnation with the pollen of another plant of the same species or variety. When the stigma is ready for impregnation, the pollen is still enclosed in the anthers, which explains the need of two distinct plants of the same kind for the consummation of the act of fertilization. The sensibility of the stigma is of very short duration. It varies according to the season; but as a rule does not continue longer than four or five hours at the outside. Generally it manifests itself in the night, when the spathe first opens, and most often when the heat of the spadix is appreciable. This sensibility is rarely of longer duration—as in the *Caladiums*, for instance. The pollen, too, quickly loses its power of impregnation, and will not keep good for more than two or three days.

To sum up. Hot-house aroids are rarely self-fertilized, so that to get good seed it is absolutely necessary to resort to artificial fertilization.

The genus *Caladium* has apparently the advantage of possessing stigmas endowed with longer-continued sensibility. Consequently, the chances of successful fertilization are better with it than with other genera. One fact is evident from Kellermann's experiments : that is the impossibility of intercrossing the species. It is also a curious fact that, although *Caladiums* generally exhibit little variety in the shape of their leaves and colouring, there is another species in a wild state, which Wallis has shown is capable of giving birth to numerous varieties.

Respecting the latter, M. Koch also says that there would appear to be no need of fertilizing with pollen from a variety with differently marked leaves ; pollen applied to a different plant of the self-same variety being sufficient to give birth to a series of new varieties with the most diverse colours.

According to this view of the case, chance must have had much to do with the production of the new varieties of *Caladium*, and M. Koch, whilst praising M. Bleu's success, does not hesitate to assert that it has been over-estimated, and that a Bohemian grower, M. Skofritz, has obtained results in every way as satisfactory and deserving of admiration.

I have not yet seen any of M. Skofritz's acquisitions ; but I feel confident that it will be a long time yet before M. Bleu finds a rival. According to the German writer, M. Kellermann has excelled his French rival by supplying our hothouses with hybrid aroids, obtained by crossing different varieties, and of superior value in a botanical and decorative sense. M. Koch also states that M. Kellermann's varieties do well as chamber-plants, whereas M. Bleu's variegated *Caladiums* require a hot-house. This, I venture to say, is a grave mistake. Like their progenitors, the new hybrid *Anthuriums* and *Philodendrons* are suited either to the hothouse or the temperate-house ; but I have never grown a sun-growing *Philodendron pinnatifidum*, *Simsii*, *Wendlandi*, etc., anywhere but in a hothouse. In ordinary rooms they make a miserable growth, and are very short-lived. On the other hand, *Caladiums* which have been suitably prepared, may easily be kept there in summer-time. They may be prepared by standing the plants on the top of the hot-beds in which they have been plunged, giving them air gradually, and watering with luke-warm water whenever the leaves begin to flag.

Whilst I fully admit the high scientific interest attaching to the crossing of an *Anthurium* with a *Philodendron*, I shall not, I think, be very far from the truth in saying that the variegated *Caladiums* will long remain the finest ornaments of our conservatories. Our florists would do well to make trial of the different methods by which MM. Bleu, Kellermann, and Skofritz have gained their reputations : they are easy to practise.

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A SPECIAL EXHIBITION OF CHRYSANTHEMUMS AND FRUIT will be held at Manchester on November 28 and 29, under the auspices of the Royal Manchester Botanical and Horticultural Society.

October.

## HOW TO DYE MOSSES, FLOWERS, AND GRASSES.



THE accompanying particulars of the mode adopted in Germany for bleaching and dyeing mosses, grasses, and flowers will afford the desired information to those correspondents who have written to us upon the subject. We would say, first of all, that the gathering of the flowers should be proceeded with at once, and that dry weather should be taken advantage of.

## TO DYE MOSSES.

*Green.*—Boil half a pound of alum in four quarts of water, and dissolve half a pound of finely triturated mineral blue in it, and a dark green dye is the result. Or a very beautiful green dye may be made with indigo—carmine and picric acid, adding water to reduce it to the desired hue. As picric acid is rarely to be had of uniform strength the exact proportions cannot be given. The same dye may be used for grasses.

*Black.*—Two ounces of logwood in one quart of water, quarter ounce of alum, and three ounces of copperas, the whole boiled together and the moss dipped into it while hot. Or two parts of logwood and one of fleabane thoroughly boiled together, and a little green vitriol.

*Red.*—The best way to make this colour is to boil as much red aniline in rain water as will produce a pretty red. The dye should be hot when the moss is dipped.

## TO BLEACH AND DYE EVERLASTING FLOWERS.

*Bleaching.*—Put a number of flowers, which have previously been placed in a warm chamber to cause them to open, in a vessel containing a solution of chloride of lime, half ounce of soda, and two quarts of water. Cover the vessel and leave it as it is in a moderate temperature for four or five days. During this period the flowers first change to an orange colour, and afterwards to a bluish-white. As soon as these changes show themselves take the flowers out and pour off the fluid, and fill it up again, using this time only one ounce of chloride of lime and no soda. Let the flowers remain in this until quite white, subsequently drying them in a warm oven.

*Dyeing.*—*Carmine.*—Quarter loth (about two drachms) of Munich lac, quarter quint (about half drachm) ultramarine blue, dissolved in twelve loths (about six ounces) of warm water. *Rose.*—Quarter quint of extract of safflower, dissolved in one quart of cold water. *Dark blue.*—One loth indigo extract in a quart of water. *Cornflower blue.*—Half loth of blue aniline, two loths of spirits of wine, in one quart of water. *Violet.*—Half loth violet aniline, with the same proportions of water and spirit. *Light blue.*—Half loth Prussian blue, dissolved in a quart of water. *Dark blue.*—One loth of catechu, boiled in a quart of water. *Light green.*—Quarter loth picric acid, and quarter quint of indigo in twenty loth of alcohol. *Black.*—As given above. *Orange.*—Three loth of borax in two quarts of hot water, leaving the flowers to steep for some time.

## TO DYE GRASSES.

The dyes for grasses, etc., are made in the same way as for the mosses and flowers, and it is not therefore necessary to give special directions for their preparation.

## PLANTING THE SPRING BEDDERS.

BY J. CALVERT CLARKE,

Head Gardener, Cothelstone House, Taunton.



WHETHER it is possible, the planting of the spring bedders should be completed by the last week of October, and if they can be planted in the early part of the month it will be all the better for them. They will have a better chance of obtaining a fine hold of the ground, and become well established before winter, than they would if planted later.

The autumn affords a good opportunity for stirring up the beds thoroughly. I have the soil stirred every year to a depth of not less than two feet. My soil is not good the whole depth of two feet, so I have two or three barrows brought to the side of the bed, and fill them with the top soil from one portion of the bed. By doing this I can work up the bottom soil to the required depth without bringing it to the surface. The whole bed is trenched over in the ordinary way, and the good soil is kept on the surface. That placed in the barrows comes in to put on the top of the last trench. This deep stirring of the soil in the beds, I find, contributes largely to my success with spring flowers. The soil being loosened below, it affords a free passage for the water from winter rains, and leaves the roots of the plants comparatively dry, or at all events in a very different state to that in which they would be if the water remained about them. It is important not to tread upon the soil at planting time more than is necessary. In planting large beds have some thin boards three or four feet long and about a foot wide, for the man to stand upon without treading upon the soil. Rather than plant in wet weather, it will be best to wait a few days, for if the soil is converted into a paste when the plants are put in, they will not thrive satisfactorily.

Having practised spring bedding now for many years, it will not be out of place here for me to say I have found that in planting the beds complicated designs are seldom satisfactory. Two or three colours only should be put in each bed, unless it be an unusually large size. The spring flowers are not so rich in colour as the summer bedders, therefore large masses are necessary to produce a good effect. It must not be inferred from this that I am disparaging those charming harbingers of spring. On the contrary, I appreciate them to the fullest possible extent; but as I am writing with a view of giving out useful information, my only wish is to point the best way of arranging them so as to secure a pleasing combination. I think also that I may usefully occupy a little space in giving a

few examples of planting. For borders clear of other plants, and three feet and upwards in width, the following arrangement may be recommended:—Back row, dark single *Wallflower*; next row, single yellow *Wallflower*, and a front row of *Myosotis dissitiflora*. A border may be planted thus with good effect:—Back row, *Myosotis dissitiflora*, next *Alyssum saxatile compactum*, next two rows of double red or crimson *Daisies*. I need not give more instances of how the plants can be arranged, as all the most useful plants can be used in the same way, with giving them various positions.

In beds the style of planting can be varied to suit all positions and tastes. One or two examples will therefore suffice, and for a round bed a star of white *Daisies* in the centre, the spaces between the points of the star filled in with red or crimson *Daisies*, and an edging of the same about ten inches wide, has a beautiful and lasting effect. A round bed of the pink *Saponaria calabrica*, with a broad marginal band of *Silene pendula alba*, is very pretty. The pink and white variety of *Silene pendula compacta* may be varied according to taste in beds of all shapes. The *Aubrietias* are indispensable in the spring garden, as they flower continuously from February until June. A centre of red or white *Daisies* and an edging of *Aubrietias* does well in contrast. A centre of *Myosotis dissitiflora* and a broad edging of *Alyssum saxatile compactum* makes another telling bed. In every case the planter must bear in mind that small patches of colour are not so telling as with the summer bedders, and where the beds are small it will prove more satisfactory to fill them with separate and distinct colours. The beautiful laced *Polyanthuses*, which are now to be had at a reasonable price, make a charming bed, and should be planted by themselves.

To have a satisfactory display of flowers in the spring it is necessary to have good plants, and to put them sufficiently close together to cover the soil, with the exception of seedling plants, such as the *Silene* and *Saponaria*. These grow apace in early spring, and if put out about four inches apart, will cover the beds in good time. Not so with *Daisies* and *Aubrietias*, *Wallflowers* and *Polyanthuses*, for it is very little growth they make before they come into flower, so that moderately thick planting is necessary. In every case plant firm, or the winter frosts will, likely enough, draw the plants out of the ground. Very few people seem to know what a glorious display of flowers a bed of mixed *Pansies* makes in early spring. Still less do they know how little is the cost of seed, time, and labour for spring gardening. Much injury has been done by the makeshift methods that have been resorted to. People will and do spend both time and money lavishly upon summer bedding, and because the spring flowers will not adapt themselves to a very niggardly system they go to the wall, and then the plants and not the system is blamed. How erroneous it is to blame the plants is abundantly demonstrated in any well-ordered arrangement of spring flowers, and, thanks to those who can and do know how to admire and grow them, there are plenty of opportunities offered to convince the most sceptical that spring flowers are as amenable to generous treatment as the fashionable summer flowers.

## WINTERING OLD BEDDING GERANIUMS.

BY GEORGE SMITH.



**B**EDDING geraniums when two years old usually produce such a profusion of bloom, that they are in many respects superior to those raised from cuttings the previous autumn or spring, and each year a portion of the stock of young plants should be lifted from the beds and kept carefully during the winter, with a view to their employment in the flower garden the following season. It is not a difficult matter to winter a few hundreds of plants lifted from the beds; not more difficult than to keep the same number of autumn struck plants. But to be successful it is necessary to be conversant with a few points which are considered to be of primary importance.

In taking up the plants the first point to be observed is to select in preference to all others those dwarf and compact in growth, but as they can be readily reduced in height, those who are bound to take all the beds contain need not be much troubled upon this point. The second point is to lift the plants before they have been injured by a severe frost, and as frosts may be expected early in October, the plants ought to be lifted and taken under cover by the end of the first week of the month. It is not absolutely necessary to pot them immediately on their being lifted, and to avoid any danger of loss the whole stock may be lifted before a single plant is potted, if the strength available for the work will not admit of the lifting and potting being accomplished within the time mentioned above. The third point is to avoid unnecessary injury to the roots, and under no circumstances to bruise or wound the shoots. The latter must under no consideration be shortened back or otherwise trimmed in, because of their great liability to decay during the autumn and winter when wounded. The best, and in fact the only safe course to pursue is to pot them just as they are lifted from the beds. It is true they have a rather unsightly appearance during the winter, but this is a matter of but little consequence, for in the spring, when commencing to make new growth, they may be pruned moderately, and in due course will break freely, and form nice bushy plants. Many amateurs and others lose a large proportion of the bedding geraniums lifted from the beds, because they act upon the idea that previous to potting them it is needful to shorten the young shoots.

In potting them singly they must be put into pots of as small a size as possible, because in the spring they must be repotted, and it is not desirable to put them into pots of an inconvenient size. If the space is limited they may be put into six-inch pots, from three to four in each, or even in boxes. When put several together, in pots or boxes, they must remain without being disturbed until they begin to make new growth in spring. Then separate them, prune back the shoots as may appear desirable, and put them separately into five-inch pots. The result, by the time they are wanted for the flower garden, will be bushy plants, which will commence to bloom freely immediately they are planted in the flower beds. The

soil in which they are put now should be rather light and sandy, but at the spring shift something substantial must be employed, such, for example, as a mixture of loamy soil and manure. At the time suggested for potting those separately which are wintered in boxes, the plants potted singly now should be shifted into pots one size larger. When they are potted off as here advised, they will of course take up much more space than a similar number of plants in small sixties, but that is a matter of no consequence, for a much smaller number will suffice for planting a given space, hence it is not necessary to have so many. When the potting is completed, they should have a moderate watering overhead to settle the soil, but from that time until the following February very little, if any, water must be applied. They will not die if the soil is allowed to remain dust-dry for two months or so, but if kept too moist they will perish at a very rapid rate.

### SPECIMEN VALLOTAS.

BY WILLIAM GARDINER.



THE beautiful *Vallota purpurea*, frequently designated the Scarborough Lily, has been alluded to in the pages of the FLORAL WORLD upon more than one occasion, and there can be no doubt that its cultivation is extending. But this extension is not sufficiently rapid, for it should have a place, and a prominent one too, in every greenhouse, for in attractiveness and beauty it is, in its season, without an equal. The leaves are bold and massive, and of the richest green; and the flowers, which are produced several together on scapes ranging from fifteen to thirty inches in height, average three inches in diameter, are waxy in texture, and of the richest vermilion scarlet. Even if the *Vallota* flowered in May or June, when there are plenty of flowers in the conservatory and greenhouse, it would be well deserving of the most widely-extended culture, but flowering as it does in September, when there is certainly no superabundance of flowers under glass, it appears difficult to recommend it in terms sufficiently strong to convey an adequate idea of its immense value. It is frequently seen in gardens and nurseries in the form of small plants, consisting of a single bulb furnished with a scape about twelve inches high, and bearing two or three flowers. Plants of this character, although not wanting in attractiveness, afford a very inadequate idea of the magnificent effect produced by large specimens. At the great International Horticultural Exhibition recently held at Dundee, several specimens were shown by northern cultivators; and it is not too much to say that they were not surpassed, and only equalled, by a very fine specimen of *Anthurium Scherzerianum*, which is rather expensive, and requires the temperature of a stove for its successful cultivation. Some of these had as many as twelve scapes, each scape thirty inches in height, an inch in diameter, and bearing four to five grandly-developed flowers; and they presented such a brilliant appearance, that they stood out boldly from amongst the large



number of fine foliage plants with which they were associated. The Vallotas were indeed so effective, that managers of societies whose exhibitions are held in the autumn, would certainly act with wisdom were they to provide a class specially for them—say for the best two or the best four specimens.

It is not necessary for cultivators who do not compete for prizes to have specimens so large as those shown at Dundee; but they ought certainly to have plants considerably larger than those common in gardens. Those in nine and ten-inch pots, with from four to six stout scapes, are perhaps the most useful for the general body of cultivators. To produce samples such as these is not a very serious task, for the Vallota is rather accommodating. It is represented by some writers to be hardy, but it is not so, and any attempt to grow it out-of-doors will assuredly end in failure. It is, strictly speaking, a greenhouse plant, and must, from the end of September until the end of May following, be kept in a house or pit from which the frost is excluded. Some writers also recommend its being dried off in the same manner as other amaryllids; but this also is a mistake, for it is a true evergreen, and the only way to maintain the plants in the most perfect health is to supply them liberally with water when they are growing freely, and to maintain the soil in a moderately moist state when at rest.

To form specimens quickly, strong bulbs, well established in five-inch pots, should be obtained now, and in February next be put into nine or ten-inch pots, at the rate of from three to five bulbs in each. Bulbs that have been dried off, shaken out of the soil, and laid several weeks in the drawers of the seedsmen, are not so good as those well established in pots, for they cannot be subjected to the drying process without suffering considerable injury. Composts of a complex character are not desirable, for the vallota requires a soil capable of affording it substantial support, and there is nothing better than a mixture consisting of sound turfy loam three parts, and well rotted manure one part. In putting several small plants into one pot, it will be necessary to reduce the ball of soil, but this reduction should be made with as little injury to the roots as possible. The pots must, as a matter of course, be efficiently drained, and the soil pressed firmly throughout, so that the water cannot sink away more quickly on one side of the pot than on the other.

In subsequent years an annual shift will suffice, and this should be into pots one size larger than those previously occupied. Some time in February or March is the best time for the annual repotting. From the moment the plants commence to grow freely until the end of May, when they may be placed out-of-doors, they should have a light position, and be within a moderate distance of the glass. A rather shady position should be selected for their summer quarters, and a bed of ashes be provided for the pots to stand upon. The necessity for abundant supplies of water has been already adverted to, and it only now remains to be said that when the plants are coming into bloom, the pots may with advantage be placed during the day in pans containing about an inch of water. This is

found to be of immense assistance to them, especially in the development of the later flowers. The pots must not remain in the water through the night. It is prudent to take the plants indoors as soon as the scapes begin to make their appearance.

## SELECTING AND PLANTING ROSES.

BY AN AMATEUR EXHIBITOR.



THE current year will long be held in remembrance for the excellence of the roses, and the splendour of the exhibitions of these flowers. In the early part of the year matters were anything but promising, but as the spring merged into summer the weather improved materially, and in the result we had a display of roses which has seldom been equalled. All the exhibitions of roses, of which the number is gradually increasing, were remarkably good, for in all the leading classes the competition was very severe, and the roses throughout were of high-class quality. In gardens, too, where no attempt is made to produce exhibition flowers, the display has been so good that cultivators generally, as well as exhibitors, have had good cause to feel thoroughly satisfied with the result, so far as the roses are concerned, of the past season. As a natural sequence of this satisfactory state of things, it is anticipated that roses will be planted in the course of the ensuing season in much larger numbers than for many years past, and also that many amateurs will, for the first time, turn their attention to the cultivation of these beautiful flowers. For the purpose of enabling those who may be desirous of making a beginning, to start well, it is proposed, in the following remarks, to give a few hints on selecting and planting roses.

It may first of all be said that no attempt will be made to give a complete code of instructions for the successful management of these flowers, but, instead, a few of the elementary principles will be discussed, and the details briefly explained. Controversial matters will, as far as practicable, be avoided; but it is impossible to proceed many steps without referring to the merits of the several kinds of stocks now employed as foster roots for roses, and the value of own-root roses as compared with those on the brier or Manetti. The value of "own-root" roses has, upon more than one occasion, been pointed out in these pages, and in the *Amateur's Rose Book* they are ably vindicated; but as roses budded on briars and Manettis are still planted annually by the tens of thousands, it is necessary in the interest of the rose-growing community to refer to the matter again and again. The trade-growers have of necessity a preference for worked roses, and it is easy to understand why it is so. With the aid of either of the stocks mentioned above, plants furnished with good buds can be produced in two years from the time the stocks are planted. But those on their own roots make rather slow progress at first, and they are, consequently, longer

on hand before they attain a saleable size. More care and skill are also necessary in propagating roses from cuttings than by means of budding or grafting, and altogether those who are interested, commercially, in roses, have good reasons for not desiring any radical change in their propagation. But the amateur, who is naturally enough desirous that his roses should produce the best possible effect, and that as they increase in age they should increase in size and beauty, should steadily encourage the cultivation of roses on their own roots. Worked roses seldom remain in a healthy condition many years, unless the conditions are eminently favourable to them, and more often than not they die off within two or three years of their being planted. But to the life of a rose-bush on its own roots no limit can well be set, for year by year it sends up strong shoots from the base, as well as making a strong growth above, and if it is cut down to the ground-line by a severe frost, it will renew itself from below in the course of the summer, and make such rapid progress, that by the end of the season it will again have become a bush of respectable size. It is sometimes urged that plants on their own roots do not produce blooms of so good a quality as those on the brier or the Manetti. But a greater delusion could not possibly exist. As a matter of fact, owing to the greater vigour usually possessed, they can be depended upon to produce blooms large in size and of splendid quality. Of this fact I have long been cognizant, but I would in passing observe that, just before the last rose show at the Crystal Palace, I had an opportunity of seeing the rose garden at Valentine's, Ilford, which has been formed almost exclusively of roses on their own roots, and a more splendid lot I have not seen, and I have reviewed some good ones in my time. The bushes have not long been planted, but when I saw them they were about three feet in height, and as much in diameter, and densely flowered. I should be afraid to say how many flowers each bush carried, but hundreds of the clusters consisted of as many as twelve flowers and buds in various stages of development, and from the majority of these clusters might have been cut blooms quite equal to any of the blooms exhibited a few days later at the Crystal Palace. The blooms were, indeed, so good, that Mr. Early might have cut a stand of thirty-six or forty-eight blooms that would have placed him at the head of the prize list, although he had not removed a single bud or resorted to any of the methods usually adopted by exhibitors, for obtaining a few flowers of extra fine quality.

Sufficient has, it is hoped, been said to show that roses on their own roots should in every case be selected in preference to those on briars or the Manetti, and it now remains to be observed, that whether on their own or on foster roots, dwarf bushes are decidedly the best, especially when required simply for the embellishment of the garden. In some few cases, standards, which must be on the brier, are desirable; but for borders or beds they are so inferior in effectiveness to the bushes, that they ought not to be planted, excepting it be in the centre of a bed or in the back row of a border. In purchasing worked roses, it must be borne in mind that the brier is the best suited to heavy, and the Manetti to light soils, and that the

roses should be obtained on the stock best adapted to the soil in which they are to be planted.

As the best results are insured by early planting, the nurseries ought to be visited, and the selection purchased, as early in October as possible, and arrangements be made to have the trees delivered and planted by the end of the month. When the planting is left until the middle of the winter the trees are not placed under conditions so favourable to their becoming established quickly as those planted earlier. February and March are by many amateurs considered suitable months in which to plant roses, but this is a mistake. In the first place, those who buy in the spring have to take the trees left by more experienced cultivators, and also run the risk of having to put up with a proportion of second-rate varieties, because of the stocks of many of the first-class kinds being exhausted. In the second place, trees planted in these months do not, under the most favourable circumstances, produce a satisfactory display of bloom the following season.

As far as practicable the stations should be marked out and the soil be prepared previous to the trees being received from the nursery, so that they may not have to remain out of the ground a day longer than is necessary.

The preparation of the soil consists in the application of a good dressing of manure, and then trenching the soil over to a depth of about two feet. When the trees have to be planted at some little distance apart, the stations should be marked, a circle drawn from thirty inches to three feet in diameter, and after a layer of manure from four to six inches in thickness has been spread over the surface, the soil must be dug over to the depth mentioned above. Few flowering plants pay so well for generous treatment in the way of manuring and deep digging as these, and some amount of disappointment may perhaps be prevented if it is here stated that it is quite useless to expect the trees to grow vigorously, and produce really first-class flowers, in exhausted soils that have simply had the surface scratched over. As a rule, all rose-trees should be planted about an inch deeper than they were before, as indicated by the mark on the stem, and in every case the roots must be carefully spread out, and a portion of the friable soil from the surface put immediately over them. Roots that have been injured in the process of removal should be shortened sufficiently to remove the damaged portion, because, if this is allowed to remain, the chances are that it will decay, and the entire root be lost. The soil must be trodden firmly, and standards and half-standards should have stakes put to them at once, to prevent their being loosened by the wind. It is difficult to give any advice in reference to the distance at which they should be apart, because so much depends upon the position in which they are required. But it may be said, that when planted in beds by themselves, they may be put from thirty to thirty-six inches apart each way. In a few years they will form a sufficiently dense mass of flowers and foliage, and during the first two or three years the surface can be carpeted with hardy annuals or zonal pelargoniums, and other of the showy summer bedders.

## A SHOW FERNERY.



AS I have become proprietor of what may be properly designated "a show fernery," not having expected or intended such a thing, it may be proper to make a note upon the subject. The hailstorm of July 23 destroyed the roof, and a great part of the front also, of our fern house. That was only a part of the loss we suffered, but it is enough to refer to now as part of a little history. This fernery consists of rockery built up against a wall and continued round the further end and front in form of a bank, beneath which are pipes for heating. The ferns had made a splendid growth, and the appearance of the house just prior to the storm was all that a lover of ferns could desire. The peppering of the hailstones on the roof was so severe that the sash-bars as well as the glass were destroyed, and so there was a good excuse afforded for somewhat of an alteration. Having carefully observed from time to time the satisfactory growth of ferns under green glass at Kew, I resolved to employ the same in providing my lean-to fernery with a new roof. No sooner thought of than done. In three weeks from the day of the storm the work was finished. The injury done to the ferns by the storm was certainly not great, and the ferns have now in great part recovered, and we see the fernery already in perfection, or nearly so, under a green light. The effect is truly magical. It affords a delightful surprise, and suggests to our friends that this is the kind of style in which to get up a genuine show fernery, with grottoes and splashing cascades, and above all things a grand growth of ferns. The glass used in the case under consideration is of a somewhat deep tint of green; its effect when the sun shines is not only to cause the ferns to appear in the most resplendent hues of golden green, but in many instances, where the white light from the open door conflicts with the green light from above, the most curious shades of rosy iridescence appear. In particular, one great tuft of the crispum variety of *Scolopendrium vulgare* is thus coloured, and, until the delusion is explained, everyone who sees it for the first time regards it as a remarkable case of variegation. Nor is this the only curious incident. Wherever white light comes in, crossing the green rays, we have lovely tints of rose, crimson, and ruby. There is one nook in a part of the rockery at the end of the house where the white light used to show through chinks in the rock in a most unromantic manner; but the green roof has made romance of that, the gleams of light through the chinks from the white glass at the end appear now of the most delicious tint of rose, and at times the whole front—which is still of white (that is to say, common transparent) glass—is of a rich rosy hue. These effects are, of course, in a certain sense illusory. The effect of the green glass on the eye is to bring forth the complementary rays of the spectrum. But no consideration of the philosophy of the case mars our enjoyment of the chromatic witchery, and as green glass has been proved to suit ferns admirably, we have no fear as to the result ultimately.

In any case where a surprise is wanted, whether in a public or private garden, such a fernery as this note refers to would be likely to answer as well as any. The green glass for this roof cost ninepence per foot.

S. H.

## DWARF PEAR-TREES FOR SMALL GARDENS.

BY E. W. WOOD, ESQ.,

Massachusetts Horticultural Society.



HERE is not, perhaps, in the whole range of horticulture any one subject upon which the public entertain opinions more diverse than upon the one selected, and this difference of opinion undoubtedly grows out of the fact that, although under a combination of circumstances that would produce the best possible results with standard pear-trees, a corresponding success might be expected from dwarfs, yet under other and less favourable circumstances the standard will grow and produce fruit where the dwarf will invariably fail. From this comes the general complaint, and some, having suffered repeated failure and disappointment, go so far as to declare the whole plan of raising and selling dwarf pear-trees an imposition upon the public by the dealers, who recommend and sell them with the full knowledge that they will soon die and have to be replaced with standard trees.

There is among tradesmen no class that receives more liberal censure than seedsmen and nurserymen, and that this censure is often in a degree merited in a business so complicated, requiring perfect system and great care to insure entire accuracy, an experience of some thirty years convinces me is true; but that by far the larger portion of the wholesale denunciation which we hear belongs to the grower rather than the seller, is equally true.

The beginner in fruit-growing visits the fall exhibitions, and, after carefully examining the long tables of pears, notes in his memorandum book the names of such as please his fancy, and, without any inquiry or investigation as to the location, variety, or preparation of soil, or care of the trees that have produced the fine specimens he has seen, he goes next spring to the nursery, and by referring to his memoranda he secures the varieties he wants, and usually about equally divided between dwarfs and standards. If his place is small and he does not employ regular help, he is obliged to entrust the transplanting to such aid as he can get at the busiest season of the year, and the chances are that the work is done with as little or less care than careful growers give to transplanting the most easily grown vegetables in the garden. Having secured his trees and had them placed in his grounds, he patiently waits for them to produce fruit similar to the specimens he has seen. Now, if the soil happens to be shallow, with a subsoil of gravel or sand, the probabilities are that at the end of five years his dwarf trees have

all disappeared, while his standards, with their longer and stronger roots foraging over a larger space, have made some growth, and the earlier-bearing varieties have produced some inferior specimens of fruit; but the result is very unsatisfactory, and exhibitions are declared humbugs, and the dealers in trees a fraud.

The production of good fruit is not the work of chance. The same causes, under the same or similar circumstances, must produce the same or similar results, subject only to the variation of the seasons, and it is well known that many of the largest and best specimens of pears shown at the fall exhibitions are grown on dwarf trees. The quince delights in a deep, strong, moist soil, and grafting the pear upon it does not change the nature or wants of its roots.

I set out upon this kind of soil, in the spring of 1862, fifty pear-trees, one half dwarfs. The ground was thoroughly prepared to the depth of two feet. The trees were three years from the bud, small, but not stunted. They had the wood of the previous year well ripened, and good roots, carefully taken from the nursery rows, and not allowed to become dry before being reset. The dwarfs were low worked, or budded near the roots, and set so low as to leave two or three inches of soil above the quince portion of the stock after it became settled around the trunk. These trees made a uniform growth the first season as strong as in subsequent years. The fruit-buds were all removed the first two years; the third year a few specimens were allowed to grow, and since that time the dwarfs have produced regular crops every year, and they have nearly, if not quite, all of them become partially or entirely standard trees, having thrown roots from the pear stock below the surface. The dwarfs gave me the advantage over standards of their early fruiting, and have in the meantime become, partially at least, standard trees, though they retain the fertility, habit of growth, and other properties peculiar to the dwarf, producing those varieties so unreliable and often imperfect, especially in the first years of fruiting, on the standards, with the same regularity and uniform good qualities as when wholly dwarfs.

Though most of the varieties of pears may be grown upon the quince, yet to a few of the more common and desirable kinds this stock seems especially adapted; in fact, were it not for the dwarfing some of the best varieties would be unknown among small collections, of which they form so desirable a part. The Duchesse d'Angoulême, one of the best, though uncertain and often worthless, especially in the first years of fruiting on the standard, is yet one of the most reliable on the quince, often producing large and beautiful specimens among its first fruit as a dwarf. The Urbaniste is a pear of excellent quality, but its value looks dim in the distant future if we have to wait for it on the standard; while as a dwarf it is an ornament in the garden, growing naturally in pyramidal form and commencing to fruit in five or six years from transplanting, after which it is among the most reliable for its yearly returns, and the fruit being distributed evenly over the tree, requires less thinning than many varieties.

The Vicar of Winkfield, though not a pear of the first quality,



yet, on account of its large size and time of ripening, desirable, and found in almost every collection, makes a strong vigorous growth as a dwarf, and its low compact form, trained as a pyramid, makes it easily accessible for thinning the fruit, which must be severely done to ensure the best results.

The Louise Bonne of Jersey, though it will fruit abundantly on either pear or quince stock, yet generally gives the best specimens from dwarfs, if the fruit-buds are all removed until the tree has gained a strong growth, and it is then allowed to bear only a moderate quantity, as its tendency is invariably to overcrop.

The list of varieties might be extended indefinitely, with their variations as dwarfs or standards, but those mentioned are among the most desirable, and are grown most successfully as dwarfs.

Leaving the question of orchard culture to those of more experience, it may be claimed for the dwarf pear, among amateurs and the large number who have small collections, and who are giving every year more attention to the cultivation of this fruit, that to all starting new places and desiring fruit as soon as possible, it is a necessity, and in order that success may be assured, let the preparation of the soil be thorough, as the cause of failure will be more generally found in the want of preparation for, rather than in the subsequent treatment of, these trees. If the land is springy, or its location renders it liable to contain stagnant water, let it be thoroughly underdrained and the soil well worked over and enriched to the depth of two feet. If, on the contrary, the soil be naturally shallow and dry, spread over the whole surface a rich compost of heavy loam and manure to the depth of one foot, and this, well worked in with one foot of the surface soil, will give the depth and quality of soil calculated to secure success with the quince stock. But with this preparation it may be necessary to mulch the ground until the trees become established, as I found from experience last season. Having set some dwarf trees in the spring, they all started well; but about the middle of July they stopped growing, and I found upon examination the soil seemed perfectly dry down to the roots of the trees. Upon giving the ground a good mulching and a thorough watering as far as the roots extended, they again commenced making growth. In selecting the dwarf trees, take only those that are low worked, or budded near the crown of the roots, so that when they are set the quince portion of the stock may be placed at least three inches below the surface, without carrying the roots too low in the ground.

Much of the pruning usually done with the knife may be better and more easily done by frequently pinching-in the stronger growing shoots. If the trees are trained in the usual pyramidal form they will frequently push a few strong shoots, which, if allowed to grow, make large, soft, unripe wood, most of which has to be cut out to preserve the form of the tree. If these shoots are pinched-in, after having made as much growth as can be retained, the wood will become hard, the sap will be thrown into the less vigorous branches, and a more uniform growth will be secured; and at the time of doing this the necessary thinning of the fruit may be performed. This is



a harder thing to do, especially in the earlier years, when the dwarfs are the only source from which the supply of pears can be expected ; but however thorough may have been the preparation and the cultivation afterwards, good fruit of most of the varieties will not be produced, if all that sets is allowed to remain on the trees.

Remove all the fruit blossoms the first two years. From two to a dozen specimens may be allowed to grow the third year ; a very moderate crop the fourth year ; a fair crop may be expected the fifth year ; and after this the trees, if in good condition and well cared for, will prove the most reliable for their yearly returns.

To those who have limited grounds the dwarf is a necessity, as, by due pruning, they may be grown several years in the limits of a circle seven feet in diameter, and thus many trees may be grown where it would be impracticable to set standards.

To those whose grounds are open and unprotected the dwarf is desirable, especially for the late and large varieties, as its low, compact form renders it much less exposed to the storms and winds than the higher and more spreading branches of the standard.

By all growers the dwarf must be used, if they would have some of the most desirable varieties of the best quality, and to those who, owing to conflicting opinions, are in doubt whether to set dwarf trees, the experience of many in this vicinity who have grown them for the past thirty years warrants the statement, that if in preparation of the ground the wants of quince roots are supplied, and the same care given that is required to ensure the best success with standards, they will prove a continued source of satisfaction to the grower, and may be left, in full health and vigour, a legacy to those in middle life whose childhood was made glad with their first fruits.

## PREPARING AND FORCING HARDY FLOWERS FOR CONSERVATORY DECORATION.

BY WILLIAM COLE,  
Grove Vineyard, Feltham.



TO insure a thoroughly satisfactory display of flowers in the conservatory during the spring months, it is of the utmost importance to commence preparations early in the autumn. The plants and bulbs have not only to be obtained and potted, but the forcing-pit has to be made ready, and a stock of fermenting materials, of which newly-gathered leaves are perhaps the most valuable, procured.

I shall not upon the present occasion say much in reference to the general cultivation of the hardy plants best adapted for forcing for early flowers ; for to do so would take up much space, and at the present moment information is most needed on the preparation of the various subjects, and on their management during the time they are in the forcing-pit. Each subject will be referred to in a

October.

very brief manner; but it is hoped sufficient will be said to show how successful results may be insured with the least possible amount of trouble.

*Astilbe barbata*, commonly known as *Spiræa japonica*, is so generally appreciated, that it is not necessary to say anything in its praise. Clumps prepared for forcing are annually imported from Holland, and can be obtained through any of the nursery or seed-houses; and, unlike many other of the roots and bulbs received from the Dutch growers, the *Astilbe* may, after it has done flowering, be planted out, and grown on for forcing the following season; indeed, if the amateur is so minded, he may, in the course of a few years, work up a large stock from a few strong clumps purchased now, and henceforth be quite independent of the trade growers. But for the present we have only to consider the preparation of the clumps for forcing. As the roots receive more or less injury by being kept out of the ground for a considerable period, they should be purchased early, and potted immediately they come to hand. A moderately rich compost should be prepared, and the strongest of the clumps be put into six-inch pots, and the smallest into others one size smaller. The soil must, with the potting-stick, be pressed very firm, to prevent the moisture soaking away too quickly. As this plant cannot be forced very early quite so well as a few other things, it is not desirable to start any of the roots until the end of January. To maintain a succession throughout the season, the stock available should be divided into three lots, and be introduced to the forcing-pit at intervals of three weeks. A temperature ranging from 65° to 70°, liberal supplies of water to the roots, and an abundance of moisture in the atmosphere, are the main essentials. From the time they are potted until removed to the forcing-pit, let them have a place in a cold frame or in a sheltered position, and be covered with dry litter or leaves.

*Azaleas*.—The pretty little *A. amæna*, which is tolerably hardy, is most valuable for forcing, for it produces its rich magenta flowers very profusely, and, when in bloom, its neat little bushes are remarkably attractive. Cuttings of the partly-ripened wood, inserted in sand, and placed in the greenhouse, will, if they are covered with a bell-glass, strike freely. When struck, they can be planted in a bed of peat, or be grown on in pots; and of the two, the latter course is preferable. In a few years nice plants may be had; but as it is cheap, amateurs will, perhaps, do well by purchasing well-established plants to begin with, and then adding to their stock according to their requirements. All the Ghent azaleas, which are perfectly hardy, force remarkably well; and to insure a good display it is simply necessary to lift from the bed, or to purchase plants well set with flower-buds, to put them in the smallest pots possible, and then place them in the forcing-house. With a temperature of 65°, more or less, and frequent syringings overhead, they may be had in full bloom in a very short time. By starting the plants at intervals they may be had in flower from Christmas until April. After they have done flowering they can be hardened off and be planted out-of-doors, and the second season be lifted and forced

again. The flowers are delightfully fragrant, and are useful for cutting.

*Callas* may be had in bloom early in the spring by starting well-established plants in January and February. Plants that were repotted in the spring and are now strong and vigorous, and have had a thorough rest, should be selected for forcing, as they are the most likely to produce flowers. Blooms of the *Callas* are generally in great request for church decorations at Easter-tide, and when required for this purpose the plants should be started beforehand.

*Dielytra spectabilis* is one of the easiest plants to force, but it is more often than not met with in a very unsatisfactory condition. The plants usually present a thin, drawn appearance, but this may be readily avoided. The crowns, like those of the *astilbe*, should be put into the smallest pots possible, but the plants, immediately they begin to move, must be placed near the glass to insure a firm, short-jointed growth, and when sufficiently advanced to require support each shoot must be secured to a neat stake.

*Deutzia gracilis*, when well-flowered, is one of the most attractive plants we have, and is well deserving of all the attention necessary to have it in perfection. Neat bushes, well-furnished with short, stubby shoots, are preferable for forcing, as they can always be depended upon for producing a satisfactory display of bloom. The plants should be lifted and potted early in the autumn, if grown in the open border; and after they have received a liberal watering, to settle the soil about the roots, place them in a cold pit, where they can remain until their removal to the forcing pit. A temperature of about 65° is the most suitable for starting them, and they should be assisted to break strongly by being syringed overhead once or twice a day. They must also receive moderately liberal supplies of water at the roots, after they have commenced to grow freely. Plants may be started soon after Christmas, but those who have not had some experience should defer starting them until the end of January. After the beauty of the flowers is past, gradually harden off the plants, and then either repot or plant them out in an open position in the kitchen garden. This is necessary to afford them an opportunity of making new growth, and becoming well-furnished with flower-buds by the autumn.

*Lily of the Valley* is so exceedingly beautiful, and usually held in such high estimation, that it should be forced in rather large quantities. It is one of the easiest of all the hardy plants to have in bloom during the winter and spring months, and if the crowns are strong and well ripened they may be depended upon to produce a plentiful supply of flowers. As in the case of the *astilbe*, clumps specially prepared for forcing are imported largely, and with these there is not much risk of the amateur going wrong. Single crowns are also imported and sold by the dozen and hundred, but for ordinary purposes the prepared clumps are the best. They should be obtained and potted early in October, and after the potting is completed place them upon a bed of coal ashes out-of-doors, and have coal ashes, cocoa-nut fibre refuse, or dry leaves heaped over them to a sufficient depth to prevent the frost reaching the soil.

Each clump must be put into a pot just large enough to receive it, and the soil be pressed quite firm to prevent the water soaking away too quickly. From the plunge-bed they can be removed to the forcing-pit at intervals as may be required, and if practicable the pots should be plunged in the hot-bed. With the assistance of a brisk bottom heat, and a temperature of about 70° they may be had in bloom from six to eight weeks from the time of starting them.

*Solomon's Seal*, although not particularly attractive when growing in the open borders, is peculiarly light and elegant when grown in pots, and started into growth with the assistance of artificial heat. It can be purchased in clumps of a suitable size for forcing, but as it may be grown in any out-of-the-way place as well as in the best position in the kitchen garden, a supply of roots should be produced at home. A bed of moderate extent will afford an abundant supply, and this may be formed now or in the spring. Moderate-sized clumps should be potted up, and then placed on one side until required for use, with a covering of some kind to protect them from frost. The pots can be placed upon or plunged in the hot-bed, but the plants, as soon as they are a few inches in height, must be removed to a light position; for, as in the case of the dielytra, the shoots become drawn, and lack grace and elegance, if they are produced at too great a distance from the glass. Nicely grown plants are specially suited for dinner-table decorations, and the sprays may be employed with good effect in the furnishing of vases and epergnes. The roots can be planted out after they are removed from the conservatory, and properly hardened off.

SHRUBS.—The most useful of these for early forcing are the *Guellder Rose*, *Persian Lilac*, the double-flowered *Japanese Cherry*, and hardy *Rhododendrons*. The latter are especially valuable, and in all gardens where flowers are forced there should be a bed of considerable extent for the supply of plants well set with flower-buds. Like the Ghent azaleas, alluded to at the commencement, rhododendrons can be lifted with good balls of soil, and consequently suffer but little from the removal. The other shrubs mentioned should be potted as early as possible, and be placed in a cold house, if room can be afforded them under cover, until wanted in the forcing pit. It is not necessary to plunge the pots in the hot-bed, but they should be assisted with a sprinkle overhead once or twice a day, until the expansion of the flowers commences.

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A DOUBLE-FLOWERED LILAC has been raised by M. Lemoine, the well-known nurseryman of Nancy, and is to be known under the designation of *Syringa hyacinthiflora flore-pleno*. It was raised from a seed of the variety called *S. azurea plena*, fertilized by pollen taken, it is believed, from *S. oblata*. The first time, only seven seeds were obtained from a hundred flowers operated upon, as the ovary is rarely perfectly developed in the flowers of *azurea plena*. Subsequent experiments have been rather more successful. Of forty plants raised, only three have flowered, among them the one bearing the above name. In habit, foliage, earlier flowering, and other particulars, this variety closely resembles the male parent, *S. oblata*, the only character of the female parent being the double flowers. The name *hyacinthiflora* was given on account of the resemblance of the flowers to those of a hyacinth in miniature. These are at first red, and with a slender tube, as in *S. oblata*, and borne in large, somewhat loose panicles.

## ON LIFTING FRUIT AND ORNAMENTAL TREES.

BY GEORGE LEE, F.R.H.S., CLEVEDON.



Y method of fruit-tree-lifting, which, I think, may be practised on forest and ornamental trees and shrubs (previous to removal) with perfect success, is as follows:—

The soil is cleared off in a circle round the tree, five, six, eight, or more feet in diameter (according to the size of the tree), down to the roots, a trench is then dug sufficiently deep, three fourths or more round, leaving only about two or three roots on one side undisturbed. The trench is dug round with a spade to cut off any roots which may have gone beyond, and the soil is worked from between the roots into the trench with a fork (this should be done with some care not to bruise or cripple the roots), and thrown out of the trench with a spade as it becomes full. In this way you get with comparative ease at any roots which may have gone perpendicularly, and are able to dig sufficiently deep to get them up long enough to turn horizontally, which is of great importance, for if these roots are cut short off, they are almost certain (except they are very large ones) to strike perpendicularly again. The soil thus cleared out, and the roots all free (except those which have been left undisturbed), the tree is turned over on the side in which the roots are left.

The next time they are lifted, the roots thus left are cut off, and the tree is turned the opposite way. Thus, if the roots are left on the west side this time, they will be left on the east next, and so on alternately.

I find on lifting a large tree, which has not been previously lifted, that some regard should be paid to the prevailing strong winds. Thus, if the prevailing strong winds are from the west, the roots should be left the first time of lifting on the west side; but it does not much matter if we begin with small trees, supposing the trees are in single rows, running north and south—the best way then would be to turn them east and west; but suppose there are double, or treble, or more rows, and they run north and south, then it will be necessary to turn them at some other angle, so that the tops and branches may be as free as possible from coming in contact with other trees, say north-east or south-west.

The greater part of my trees, which have been lifted several times, would, if taken entirely out of the ground, stand on the surface without any support, and it would take quite a strong breeze to upset them, and, I think, the labour is amply compensated by the superior crop of fruit, both as to quality and quantity. Perhaps I ought to speak more strongly than this, for I consider the crop pays several times over the expenses. But for my experience in lifting (for which I am indebted to Mr. Rivers; for although my method differs materially from his, yet it has been suggested by it, and but for his I should never have thought of mine) my trees, more than 2,000 in number, would have been almost valueless, from my having some years since to clear off the garden then occupied for building

purposes ; whereas many of them might have been sold for from ten to forty shillings each.

I begin early in the season, and continue till the spring, as I lift many hundreds every season ; but I begin with the ripest first, generally cherries, always choosing the mildest, but especially moderately dry weather (I find the trees suffer if lifted in very wet weather), and in filling-in, I never tread down the soil, and rarely have one blow over, not more than one in eighty or ninety.

I begin on very young trees, say the second year after planting, and I generally plant maiden, or sometimes two-year old trees ; and if we begin so early, there are no large roots taking a perpendicular direction. Great care is taken in pruning the roots while the tree is on its side and laying them carefully in, keeping them as directly out from the tree as possible, so as eventually to form a circle, and the soil is carefully worked over and levelled with a fork. The depth of the hole must be regulated as well as the width by the size or height of the tree ; but none of the roots, even of large trees, are above fifteen or sixteen inches deep, and of those which have been commenced with young (although they may now be large) not more than about ten or twelve inches. They do not require any support in any one season to prevent their getting blown over—a circumstance which I consider of great importance. If trees are begun with when young, and lifted carefully, they soon have an abundance of roots, and their lifting is very little check to them, except in making wood, and even this can be regulated at pleasure.

I perhaps ought to say that I find quince and paradise-stocks lift quite as well as crab or pear, but it is not so with *Cerasus mahaleb*. This I do not find lift at all well in any soil. After the trees get large, every bruise or scratch in the roots becomes attacked by a fungus, which always produces bad health, and frequently death.

If it is necessary to lift a large tree which has not been previously lifted, a somewhat wider circle must be taken, and perhaps one-third of the roots, or nearly so, be left undisturbed. The turning over will be a little difficult, but not so much so if the soil is cleared some little distance further on that side, so as to allow the roots more space to bend ; and as the roots will most likely be grown very irregular, to keep them properly spread and in their places, it will be best to have some strong fork pegs, well pointed, and inserted with a small iron bar, and afterwards driven firmly in with a wooden mallet. These will not only keep the roots in their places, but will help to secure the tree from blowing over. But in addition to these, *very* large trees will require some other support to keep them quite safe. I use long forked poles, about three or four of which are inserted at angles ; but of course, none will be needed on the opposite side to that on which the roots are left. But as these would look very unsightly on a lawn or any conspicuous place, tar-ropes may be fastened, say, at two-thirds the height of the tree, previously placing a good bandage round it to save it from being wounded. The ropes will, of course, be fastened at angles to sufficiently strong pegs, and by means of such ropes, the trees may be far more easily lowered, and raised upright again.

As I have practised this mode of tree-lifting for many years, and on many hundreds of trees, I can confidently recommend it as a most successful method, and I know that no one will regret giving it a trial if it is done carefully. I perhaps ought to say a few more words about pears on quinces, apples on paradise-stocks, and cherries on cerasus. As to their producing fruit earlier, there can be no question. I find many cherries bear even a much better crop than on the free stock; but, as I said before, they do not lift so well when they become large as they do on the free stocks, and quince stocks do not do in very sandy soil. I find apples on paradise-stocks bear well; but they are difficult to keep upright if lifted when the trees get large, from the extreme smallness of the roots.

How much has been written about the removal of large hollies, and other large trees and shrubs, both as to manner and the particular time *too!* and what a cumbrous affair it has been in removing many cwt. and sometimes tons of soil in the operation, and then, after all, a frequent risk as to their growing; whereas, in this way, there is no occasion to remove any larger proportion of soil than in the case of a tree or shrub two feet high. In this way they are almost certain to grow—at least, I have only lost one out of many hundreds, and that was more through carelessness than default in the method. What valuable trees are, after many years' growth, found to be in the wrong place; what a desire that they should occupy a more conspicuous or a more favourable place; but what a risk in their removal! Consequently, they are allowed to remain where they are, rather than run the risk of sacrificing them; but by treating them as I have mentioned in reference to large trees, not previously lifted, there is great prospect of success.

I am a market gardener, and very fond of fruit-growing, and of course want to get something by it (that is, make it pay), and I find that my attention to lifting, as I have described, answers admirably, both as to quantity and quality.

## FRUIT CULTURE ON FARMS, AND IN PADDOCKS AND HEDGEROWS.

BY THE REV. W. LEA.



**A**T a late meeting of members of the Midland Farmers' Club, held in Birmingham, the Rev. W. Lea read a paper on "Fruit Farming." He said the chief point to bring forward for discussion was—"Will it pay a farmer in the present day to make the growth of fruit a portion of the regular work of his farm?" A few years ago he should have answered without any hesitation in the affirmative; but before he did so now he should first inquire into the condition of the labour market in the district in which it was proposed to plant. Fruit was an article which must go off when it was ripe; if it was not gathered and marketed some sorts would be spoiled, and to gather it a certain amount of women's and children's labour was required. If this was at command, one difficulty would be removed. The questions of soil and situation should, of course, be considered. There were few soils, even the lightest sands, which would not bear some variety of fruit. But before a man began to plant, he

should ascertain from a careful inspection and inquiry in the neighbourhood what fruits were congenial to the soil, and confine himself, of course, to those sorts. There was no certain rule to be laid down on the subject. Some districts were most suitable for the apple, others for the pear, others for different kinds of plums or damsons; and sometimes in one field the soil varied so much as to make it desirable to plant one variety of fruit at one end of it and a different one at the other. Next came the question whether the landlord or the tenant should plant; if the latter, would it pay him to plant on a seven, fourteen, or on a twenty-one years' lease? and if he left at the end of these terms, what compensation should he receive, and from whom should he receive it—from the landlord or the incoming tenant? He was of opinion that the best arrangement would be for the tenant to plant, and for the landlord to undertake to pay, at the end of the lease, the cost price of all trees left in healthy condition, and interest upon the outlay at five per cent. per annum. Fruit planting was profitable both to landlord and tenant if properly done, and the sorts well selected. The advisableness of planting young fruit-trees in a hedgerow must depend a good deal on the age and strength and nature of the hedge. If it was of old vigorous quick, the roots would probably have taken such entire possession of the soil that a stock newly introduced into it would only lead a sort of languishing existence for several years, perhaps, and then die away. But if anyone wished to try the experiment, he would recommend him to plant wild stocks, and graft them with the sorts desired. If a hedge were being planted, there would be no such difficulty; the fruit-trees should have the same chance as the quick, and both would grow up side by side together. This plan would be worth trying, or, indeed, the first-mentioned, provided the hedge was between two arable fields. If it were between two grass fields, or with a grass field even on one side, the advantage would be questionable; for the cattle, in trying to get at the fruit—of which they are very fond—would probably do as much harm in breaking the fences as would be covered by the profit of the fruit. Some damage, too, would unavoidably be done to the hedge in the gathering of the fruit. Planting an orchard on turf was comparatively expensive, which was a point requiring to be taken into account. A good deal of labour was required to do it well, and if it was not done well, it was better not attempted at all. On the whole, it was questionable whether it would pay to plant an orchard on turf, except on some banky, sloping fields, with a south aspect, which seemed specially adapted to the purpose. Then came the third alternative, which seemed to him the most desirable: to plant an orchard on a well-fenced piece of arable, as near as may be to the house, and from which cattle of all kinds are to be entirely excluded. Here it might be done at much less expense, as no protection would be required except against ground game. Supposing an acre to be square, 209 by 209 feet, it might be cultivated in two ways: (1) by planting standard fruit-trees in rows, thirty feet apart, and filling up the space between with rows of plums and bushes; (2) by standards—apples, pears, and cherries, by plums or damsons, by bushes, currants (either black or red), and gooseberries. According to this plan the whole field would have to be cultivated with the spade, and would take pretty well the whole time of one man if it were three or four acres in extent. What was called "pot fruit" was required now as a rule. The apples and pears which paid best were those which came in earliest, and which kept latest. These last probably brought the highest price. But when the cost of storage and of picking over had been deducted, he doubted if they paid so well as the first. If they were going to buy trees, let them go to the nurseries themselves, select and mark the trees to be sent in planting season. They were not necessarily to pick out the biggest, but rather vigorous, healthy young stocks, which showed no sign of having been checked or stunted in their growth. They should not go in for too many varieties of fruit. On his three acres he had more than 100 sorts of pears, forty of apples, thirty of plums, to say nothing of currants and gooseberries. From his own point of view this variety was necessary; for he was experimenting to see what sorts would best suit the locality and pay the best; but to farmers this endless variety would be very troublesome, especially if the specimens were dotted about in different parts. The best plan, if they were planting a hedgerow, was to plant it all with one sort of fruit. Then, one going over the ground, or at most two gatherings, sufficed, and a vast deal of labour and confusion were saved. So, too, in orchards whether on turf or arable. If they had several sorts, let them keep each sort in a



separate row ; or if more than one row of the same sort was desired they should have the rows together, so that that portion of the ground might be cleared at once of its produce. They should be very careful about the pruning for the first three or four years, until the heads were got into shape. After this, the trees might be left to themselves, merely cutting out the branches which interlaced from time to time.

## THE GARDEN GUIDE FOR OCTOBER.

THE day is cold, and dark, and dreary ;  
It rains, and the wind is never weary ;  
The vine still clings to the mouldering wall,  
But at every gust the dead leaves fall,  
And the day is dark and dreary.

My life is co'd, and dark, and dreary ;  
It rains, and the wind is never weary ;  
My thoughts still cling to the mouldering past,  
But the hopes of youth fall thick in the blast,  
And the days are dark and dreary.

Be still, sad heart! and cease repining ;  
Behind the clouds is the sun still shining ;  
Thy fate is the common fate of all,  
Into each life some rain must fall,  
Some days must be dark and dreary.

LONGFELLOW.

### FLOWER GARDEN.

There are but few really first-class hardy flowers that are at their best during the month. If the weather continues open the bedding violas, such as *Viola lutea grandiflora* and *Viola Perfection* will bloom freely. *Aster Nova Angliæ* and *A. pulcherrima* will be at their best, and if in sufficiently large clumps will form a quite distinct feature in the herbaceous border. Take up and pot all zonate and variegated geraniums which are intended to be preserved during the winter, for they seldom do much good after exposure to several sharp frosts. The dead foliage can be removed ; but avoid breaking or cutting the branches, as spring is the best time for pruning them. Place under shelter, and protect them from frost ; but at all other times ventilate freely, and give little water until the turn of the winter, when they will be established in the soil. Clear off summer bedders, and then fill with plants for spring flowering. A good display of spring flowers can be produced by such a trifling amount of skill and labour, that no flower garden ought to be bare of flowering plants during April and May. The best things for spring bedding are *Silene*, Wallflowers, Forget-me-nots, *Arabis*, *Alyssum*, *Aubrietias*, Pansies, and *Iberis*, and spring bulbs. The late Tulips must not be planted until next month, and the Anemones and Ranunculuses are as well out of the ground until next February. Plant every kind of hardy herbaceous plant from the cutting-pot or seed-bed. Securely stake Chrysanthemums, both in pots and the open borders, to prevent injury from winds. Tie out in a natural manner, and avoid the wretched system of using one stake, and tying all the growth into a bundle round it.

### KITCHEN GARDEN.

Trench and ridge up all vacant quarters that are not to be occupied during the winter. This will give the soil, brought up from the bottom of the trench, ample opportunities to be thoroughly pulverized. Remove stems of Asparagus, dress the beds with rotten manure, and cover with a few inches of soil from between the alleys. Capsicums and Tomatoes, still unripe, must be gathered and laid out singly in a dry room or warm greenhouse to ripen. Take up and store Carrots, Beet, and Potatoes ; the Parsnips are as well left in the ground for the present, but on the approach of severe frost, it is well to lift a few for immediate use. Lettuce and Endive fit for use must either be lifted and laid in by their heels, or be protected from frost and damp with hand-glass, ground vineries, or cloches. Tie up successional batches, and choose a dry day for the operation. Towards the end of

October.

the month is a capital time for making fresh plantations. Let the ground be well manured and trenched, and a moist situation selected if possible.

#### FRUIT-GARDEN.

Raspberries, and Currant and Gooseberry bushes, may be planted towards the end of the month. Gather Apples and Pears as fast as they are sufficiently advanced. Keep the early and late ripening varieties as far apart as practicable, to prevent the exhalations arising from the former interfering with the keeping qualities of the latter. Trench and prepare fruit borders for planting as soon as possible, so that there may be no loss of time in planting the trees.

#### GREENHOUSE AND CONSERVATORY.

House at once every description of plants requiring shelter under glass during the winter. This is particularly necessary in the case of Azaleas, Camellias, Epacris, and other hard-wooded plants. Primulas for early flowering will be materially benefited by being placed in a genial growing temperature of 50°, later batches will make good progress in a temperature five degrees lower; avoid a damp atmosphere. Dry off Cannas and Fuchsias ready for wintering in a dry outhouse, where they can be securely protected from frost. In case of damp weather towards the end of the month, apply a little fire-heat, early in the day, to dry up the dampness, and change the air within the house.

#### STOVE.

All except the winter-flowering plants will have completed their growth, and, therefore, require less heat and moisture than hitherto. Euphorbias, Thysacanthus, Poinsettias, flowering Begonias, Luculias, and Gesneras, must have every encouragement to enable them to complete their growth quickly. The temperature of the orchid-house must also be considerably reduced, and Cattleyas and Dendrodes have very little water.

### HORTICULTURAL AFFAIRS.



THE EXHIBITION OF FRUIT, announced to be held at the Royal Aquarium, Westminster, on October 4, has, at the last moment, been abandoned. It was anticipated that this would have been the most important exhibition of fruit that has been held in the Metropolis for many years past, and it is much to be regretted that it should have been found necessary to abandon it.

THE DUNDEE INTERNATIONAL HORTICULTURAL EXHIBITION, on September 7, 8, and 9, proved, we are glad to say, a splendid success. Upwards of £1000 was offered in prize-money, in addition to several gold and silver medals, and the competition in the two hundred and odd classes was very spirited. The grapes formed unquestionably the most important feature of the exhibition, for of these there were no less than 400 bunches, all more or less good. The heaviest bunch of white grapes was that of the Calabrian Raisin, exhibited by Mr. Curror, of Eskbank, which weighed 15 lb. 2 oz.; and the heaviest bunch of black grapes was the cluster of Alicante, weighing 10 lb. 2 oz., exhibited by Mr. Dickson, of Arkeleton. The exhibition was opened by the Earl of Strathmore, and during the three days it remained open the show was visited by no less than 32,000 persons, and the sum of £1060 was taken at the gates. In addition, £340 were received in the form of subscriptions, and £300 as donations; the total sum received amounting to £1700.

THE SECOND ANNUAL EXHIBITION OF INSECTS in Paris was held, in the course of last month, in the Orangery of the Tuileries. Classes were added for showing hand-implements of all kinds in use in horticulture, particularly those used in the destruction of insects.

MR. B. S. WILLIAMS's admirable work on tender "Ornamental-leaved Plants" has very quickly reached a second edition, and the author has taken advantage of

the circumstance to effect a few improvements. It is the best book of its class for the cultivator to keep at hand for ready reference.

*TILLANDSIA TENUIFOLIA*, a pretty plant, with tufted grass-like, or rather luzula-like leafage and delicate purplish inflorescence, is figured in the August number of *La Belgique Horticole*. In the same number are figures of *Bromelia Joinvillei*, a very showy plant; *Miltonia Clowesi* v. *Lamarcheana*, *Cattleya dolosa*, and *Bilbergia nutans*.

**PRESERVING THE COLOURS OF DRIED FLOWERS.**—M. Boulade recommends the following plan for preserving the colours of flowers of the herbarium :—Lay out the flowers between several sheets of unsized paper—filtering paper; place these sheets between two fire-bricks, and put the whole in a stove or oven heated to 60° or 70° Cent. Change the papers after an hour. After two or three hours the flowers will be sufficiently dried, and their colours preserved.

**CORRESPONDANCE BOTANIQUE**, edited by Professor Morren, is a singularly useful book to those who have occasion to correspond with botanists and horticulturists beyond the range of their home circle. It contains a complete list of gardens, botanical professorships, museums of botany, and representatives of botany and horticulture in all parts of the world, the arrangement being geographical, and the whole being supplemented by a good index. The latest issue is corrected to June, 1876. Copies may be obtained at No. 1, Boverie, Liège.

A **FLOWERING BRANCH OF CEDRELA SINENSIS** was exhibited at a recent meeting of the Académie des Sciences, Paris, by Professor Decaisne. This is an exceedingly ornamental hardy tree, resembling *Ailantus glandulosus* in habit and foliage. It was introduced a few years ago by Messrs. L. D. Geoffroy and E. Simon, representatives of France at the Court of Peking; but it was originally discovered in 1743 by the Rev. Father Incarville, who transmitted specimens to Bernard de Jussieu. Being a native of the north of China, it is perfectly hardy in the climate of London; and from the descriptions of it in French journals, it is a great acquisition to the small number of hardy trees with pinnate leaves. The white flowers are small, but numerous, and borne in erect panicles often more than eighteen inches in length.

**THE LAVENDER CROP** has been unusually abundant this year. Not half so much attention is paid by the public at large to lavender as it deserves. Of the different species which have been described by botanists only two are commercially valuable—the common lavender, *Lavandula vera*, and the French lavender, *L. spica*. The former yields the fragrant oil, the solution of which in spirits of wine is called lavender water; while the latter is used by painters on porcelain, and in the preparation of certain varnishes. Still, lavender has a right to complain of the slight amount of popular homage paid to it. The truth must be told—it is going out of fashion. Yet chemists declare that lavender flowers constitute no less than ten per cent. of the ingredients in eau de Cologne, the remaining components being balm, mint, marjoram, thyme, rosemary, hyssop, wormwood, angelica, cardamoms, juniper berries, caraway seeds, cinnamon, nutmegs, cloves, orange peel, jasmine, essence of roses, and bergamot. It is at the same time questionable whether this wonderful combination can in the long run approach in simple fragrance our good old English lavender water.

**PROPAGATING XANTHOCERAS SORBIFOLIA.**—M. Rivière states that this beautiful new shrub is rather difficult to raise from cuttings in the ordinary way, but that it may be propagated with the greatest freedom by means of root-cuttings formed from small portions of the root.

## NEW BOOKS.

**THE FERN PARADISE: A PLEA FOR THE CULTURE OF FERNS.** By FRANCIS GEORGE HEATH (Hodder and Stoughton).—The brave pioneer in the clearing out of trespassers from Epping Forest, and insuring to the people undisputed right to its enjoyment as a recreation ground for ever, has in this charming little volume given proof that his love of the country is as genuine as his political activity suggested. Mr. Heath, in his "Fern Paradise," discourses pleasantly on ferns as

they are seen at home, sparkling under the splash of the waterfall, crowning the crumbling bastion, festooning the pollard oaks and alders, or fringing the rocky roadway through a country wherein they are the commonest of weeds and therefore the cheapest of vegetable beauty. But it is not in this tempting domain only that the author of this book invites our attention, for he comes into the garden to tell us how to grow ferns, and to point out to those who are not familiar with the species their distinguishing characteristics, their habitats and their requirements, and he describes in detail the more attractive of the many that are inhabitants of Britain. The result is a light, entertaining, but still a somewhat substantial epitome of fernlore, suitable to the case of thousands who want to know enough to be able to enjoy ferns thoroughly, and who if they go beyond such a book as this will nevertheless be for the rest of their days thankful that such an agreeable first start in the study was provided them. We recommend those of our readers who are in need of an elegant introduction to the study of ferns to secure this attractive volume, and to act upon its advice both on the ferny hillside and in the garden.

**CHOICE STOVE AND GREENHOUSE ORNAMENTAL-LEAVED PLANTS.** By B. S. WILLIAMS, Victoria Nurseries, Upper Holloway.—This is the second edition of a work we strongly recommended on its first appearance, and must still more strongly—if it be possible—recommend again, because it has been enlarged and improved, and brought down to the latest state of the subject of which it treats. The new crotons, dracenas, dieffenbachias, palms, etc., that have acquired popularity of late years are herein described, their distinctive merits enumerated, and their cultivation fully detailed. The name of the author is a guarantee for the accuracy of the work, which in plan and style is sound and good throughout. It is a book that the plant-grower will be careful to keep near at hand, it may be for daily instruction in garden work, or it may be for occasional reference only. In any case it is in respect of fine foliage plants the best vade mecum in the English language.

**THE INFLUENCE OF THE BLUE RAY OF THE SUNLIGHT, AND OF THE BLUE COLOUR OF THE SKY IN DEVELOPING ANIMAL AND VEGETABLE LIFE, ETC. ETC.** By GEN. A. T. PLEASANTON (Trubner).—A remarkable treatise on a profoundly interesting subject. There has been much written, as the result of experiment and speculation, on the subject of the influence of various colours on organic structures, but the results are few and small, the simple truth being that the common daylight is the best light for everything that requires light, generally speaking. Nevertheless this book is intensely interesting and tends to practical results, though not without some extravagances that detract considerably from our estimate of the author's ability to grapple with the task he has undertaken.

**RIVISTA INTERNAZIONALE.**—This new review, published at Florence and supplied in London by Mr. Nutt, of 270, Strand, appears destined to rank high in its range of operations, and influence cultivated opinion on literary, scientific, and industrial subjects. It is sufficient that we apprise our readers of its appearance, and add that we are impressed with its solidity and respectability.

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## TRADE CATALOGUES.

**BARR AND SUGDEN, 12, KING STREET, COVENT GARDEN, W.C.**—*Descriptive Catalogue of Bulbs and Plants.*

**WILLIAM BULL, KING'S ROAD, CHELSEA, S.W.**—*A Retail List of Bulbs and Tuberos Rooted Plants.*

**J. CARTER & Co., 237 & 238, HIGH HOLBORN, W.C.**—*Catalogue of Dutch Bulbs, Fruit Trees, etc.*

**DICKSON AND ROBINSON, 12, OLD MILLGATE, MANCHESTER.**—*Catalogue of Dutch Bulbs.*

**DANIELS, BROTHERS, NORWICH.**—*Illustrated Catalogue of Dutch Flower Roots.*

**J. DICKSON & Sons, 108, EASTGATE STREET, CHESTER.**—*Catalogue of Bulbous Flower Roots, etc.*

DIXON & Co., 34, MOORGATE STREET, LONDON, E.C.—*Catalogue of Dutch and other Flower Roots.*

EDMONDSON, BROTHERS, 10, DAME STREET, DUBLIN.—*Autumn Catalogue of Bulbs, etc.*

JOHN FRASER, LEA BRIDGE ROAD, LEYTON, E.—*Catalogue of Flower Roots.*

COOPER & Co., COVENT GARDEN MARKET, LONDON, W.C.—*Catalogue of Autumn Bulbs, etc.*

M. E. AND E. HORLEY, HORTICULTURAL BUILDERS.—*Illustrated Catalogue of Patent Portable Garden Structures.*

JAMES W. MACKEY, 40, WESTMORELAND STREET, DUBLIN.—*Descriptive Catalogue of Dutch Flower Roots.*

L. JACOB-MAKOY AND SONS, LIEGE, BELGIUM.—*Price Current of New and Rare Plants, etc.*

A. LEGERTON, 5, ALDGATE, LONDON.—*Wholesale Catalogue of Dutch and other Flower Roots.*

LITTLE AND BALLANTINE, CARLISLE.—*Illustrated Priced Catalogue of Plants.*

JOHN MOORE, GOODHOPE ROSE NURSERIES, AND 56, MARKET PLACE, WARWICK.—*Catalogue of Roses and Spring Flowering Plants.*

THE NEW PLANT AND BULB COMPANY, LION WALK, COLCHESTER.—*Retail List of Japanese and other Lilies, Orchids, Plants, Seeds, etc.*

WILLIAM RUMSEY, JOYNINGS NURSERIES, WALTHAM CROSS, N.—*Select List of Roses, Ornamental Trees and Shrubs, Fruit Trees, etc.*

THE ST. PANCRAS IRONWORK COMPANY, ST. PANCRAS ROAD, LONDON, N.W.—*Illustrated Catalogue of Stable Fittings, etc.*

F. SANDER AND Co., ST. ALBANS, HERTS.—*Price List of Hyacinths, Tulips, and Miscellaneous Bulbs.*

E. B. SPENCE, 17, TUBWELL ROW, DARLINGTON.—*Price List of Palms, Orchids, Ferns, and Hardy Perennials.*

CHARLES TURNER, ROYAL NURSERIES, SLOUGH.—*Catalogue of Hyacinths Narcissus, Tulips, and other Choice Bulbous Roots; also Catalogue of Strawberries.*

B. S. WILLIAMS, VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, LONDON.—*Catalogue of Bulbs, Fruit Trees, New Plants, Roses, etc.*

WOLSTENCROFT BROTHERS AND Co., LUDGATE HILL CHAMBERS, LONDON, E.C.—*Illustrated Price List of Wagstaff's Improved Upright Tubular Boiler.*

## TO CORRESPONDENTS.

*W.J.T.*—The plant is probably *Aponogeton distachyon*, but we cannot of course speak positively without first seeing the flowers.

HEATING SMALL ORCHID HOUSE.—*A Constant Reader.*—The most satisfactory plan would be, to have a service of hot-water pipes, and a small portable boiler. You will require a flow-and-return pipe, which should be three inches in diameter, on each side of the house. Messrs. Deards of Harlow manufacture a small portable boiler which appears to be specially suited to your requirements. The house may be heated by means of a flue, which is comparatively inexpensive to construct, but we consider the service of hot-water pipes decidedly preferable. You can ascertain the price of the boiler by applying to the manufacturers.

CUCUMBER DISEASE.—*F.W.S.*—The plants are suffering from what is known by cultivators as the "Cucumber disease." Various remedies have been suggested in the course of the last three or four years but up to the present movement, not one of them has been found effectual in checking the ravages of the disease. We regret that the answer to your letter has been delayed.

*Alma, Leeds.*—The name of the plant is *Galega orientalis*.

PELARGONIUMS FOR OUTDOOR DECORATIONS.—*W. East, Yorkshire.*—To form large specimen pelargoniums for out-door decoration during the summer months, we would advise you to select in February next a certain number of strong plants in five or six inch pots, and put them three or four together into pots eleven inches

October.

in diameter. In putting them into the large pots, the balls of soil must undergo some little reduction to admit of their being nicely arranged. A compost consisting of good turfy loam and thoroughly decayed manure is the most suitable for producing a vigorous growth. The plants put into each pot must consist of one variety, for mixtures lack effectiveness, and moreover proclaim the fact that more than one plant has been employed in building up the specimen. Plants lifted now from the flower-beds, put into small pots, and kept in the greenhouse, will be found most useful for the formation of large specimens in the spring. It may be added that the formation of specimens from single plants is a work of some years, and that those consisting of several examples are in every way as effective, although they would not be suitable for competitive purposes in the exhibition tent.

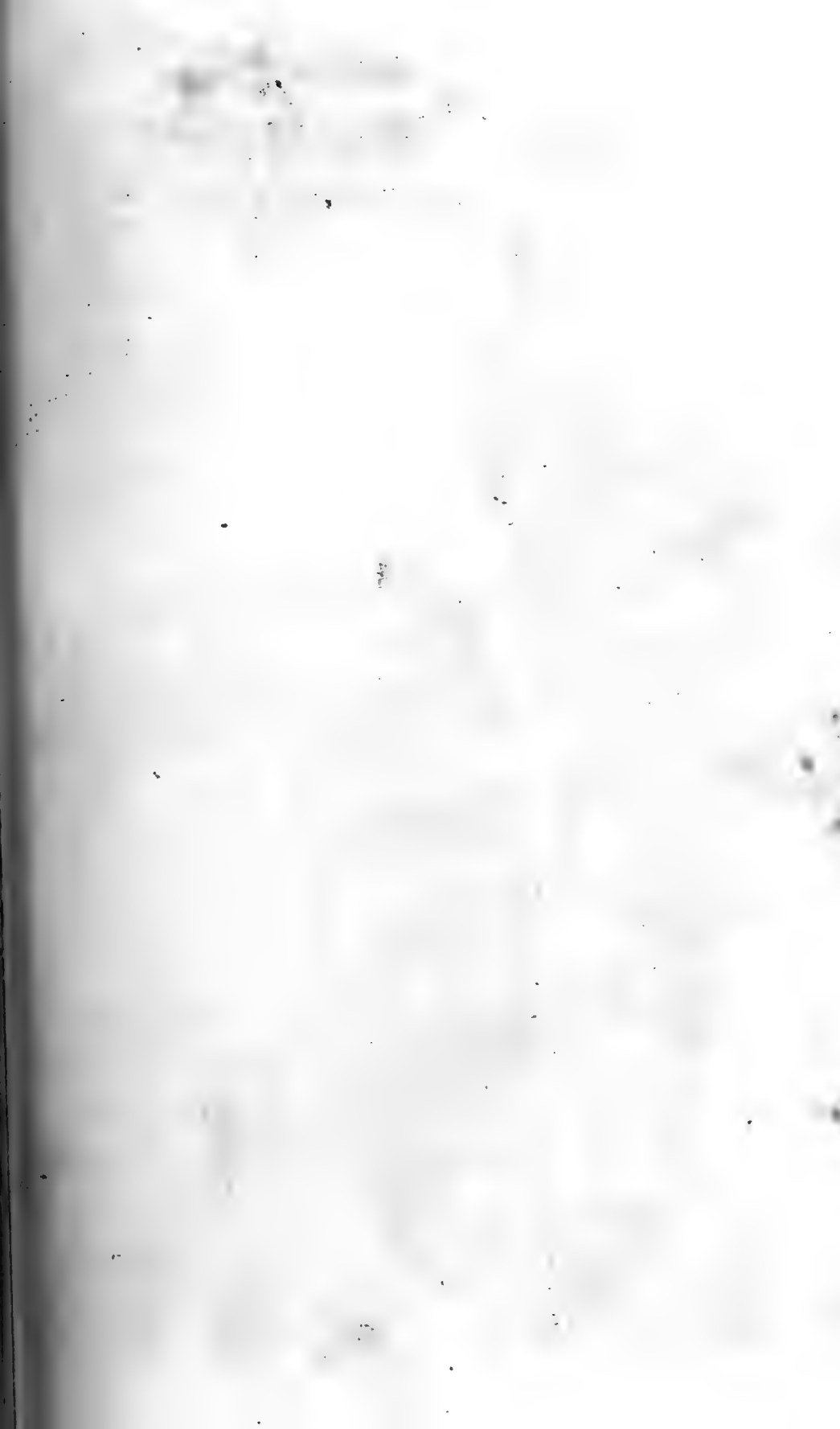
*A Subscriber, Wolverton Park.*—The plant, of which you saw considerable numbers in Paris last summer, was probably one of the single Pyrethrums. They grow in much the same manner as described in your letter, and the flowers also are similar to those of the plant you mention. Pyrethrums may be obtained of Mr. T. S. Ware, Hale Farm Nurseries, Tottenham, or of any nurserymen who make a speciality of hardy herbaceous plants.

**VIOLETS AND FERNS.**—*G. H. D., Crosshill.*—The old bed of violets should be broken up, and the strongest runners selected, and a new bed be made with them. The soil must be enriched moderately with manure, and be broken up with the spade or fork to a depth of about twelve inches. The runners should be put about six inches apart, in rows, with a space of ten inches or so between them. The sporting of the ferns cannot well be prevented.

**CROCUSES.**—*K. F.*—These early-flowering bulbous plants may, as the examples presented at the public exhibitions abundantly testify, be grown most successfully in pots for the decoration of the conservatory. The pots must, after a few crocks have been placed in the bottom, be filled with a mixture of loam and leaf-mould or loam and manure. Then proceed to insert the bulbs regularly and rather thickly over the surface, and when this has been accomplished, place the pots on a hard surface out-of-doors, and cover them with a good layer of ashes. They must remain covered until the pots are nicely filled with roots, and then be removed to a pit or frame, where they can be kept safe from frost; and the frame must, excepting in frosty weather, be freely ventilated. The named Dutch varieties only possess sufficient merit to be grown in pots. Eight of the best and most distinct are:—*Large Golden Yellow*, the finest of all the yellow forms; *Charles Dickens*, purple; *Lilacinus superbus*, azure blue; *Mont Blanc*, pure white; *Pride of Albion*, white-striped violet; *Ne Plus Ultra*, lilac-purple; *Sir Walter Scott*, beautifully-pencilled lilac; and *Fulcan*, purple-lilac. As the flowers do not remain in perfection for any considerable period, we would not advise you to grow a very large stock.

**VIOLETS FOR WINTER FLOWERING.**—*Amateur.*—A plentiful supply of violets may be obtained by the following course of procedure, as you have a large bed of strong plants to draw from. First of all make up a bed three or four feet high of leaves as soon they can be obtained. Place a frame upon the bed, and inside of this cover the leaves with about eight inches of friable soil. The size of the bed must be regulated by the frame, but it should exceed the latter by about three feet both in length and breadth. Strong clumps must be lifted from the bed and planted rather close together in rows, about ten inches apart. The frame will require ventilating moderately in weather favourable to air giving, and in frosty weather mats or some other protecting materials must be placed over the glass. Fermenting materials other than leaves may be employed, providing they will not give off too great a heat. A genial warmth at the roots is all that is required, and if the bed is too hot the plants will be more or less injured.

**WINTER CROCUSES.**—*Inquirer.*—The winter-flowering crocuses, although they do not produce flowers of such a large size as the Dutch varieties flowering in the spring, are exceedingly beautiful, and well deserve to be planted in suitable positions as extensively as their comparatively high price will admit. They should be planted as far as practicable in sheltered nooks, and where they are likely to be readily seen. The most beautiful of the winter-flowering species are *Crocus Imperati*, violet, fawn, and black; *C. Oliveri*, orange yellow; *C. Sieberi*, violet. As the bulbs range in price from sixpence to a shilling each, these species should only be planted on warm, dry soils, and in select positions, where they can be depended upon to bloom satisfactorily, and the flowers seen to the best advantage.







## NOTES ON PHALÆNOPSIS.

BY WILLIAM GEDNEY,

Head Gardener to J. C. Day, Esq., Tottenham, N.

(With Coloured Illustration of *Phalænopsis Schilleriana*.)

THE genus *Phalænopsis*, to which the magnificent orchid here figured belongs, comprises about twelve exquisitely beautiful species, and in some respects it may be fairly considered one of the most important of the numerous genera which now have a place in the orchid house. As regards numbers, it will not bear comparison with such genera as *Dendrobium*, *Epidendrum*, and *Odontoglossum*, which can number their species and varieties by the dozen; but to show how justly the phalænopsids are entitled to a place in the front rank, it is sufficient to draw attention to the lovely *P. amabilis*, with its broad, leathery, deep green leaves and snow white flowers; to the more robust *P. grandiflora*, with its large pure white flowers, the lips beautifully tinted with yellow; and to the glorious *P. Schilleriana*, with its bold richly marbled foliage, and huge racemes of lovely rose-tinted flowers. The accompanying illustration is remarkable for its truthfulness and is thoroughly satisfactory; but to have anything like an adequate idea of the extreme splendour of this species when in bloom, the reader must imagine leaves ranging from fifteen to eighteen inches in length, and of a proportionate breadth, on a plant surmounted with a branched panicle, from two to three feet in length, and bearing from one hundred to two hundred and fifty of the most delicately coloured flowers.

It is not known exactly when this phalænopsid was first introduced into cultivation, but it is a matter of history that it first flowered in the then famous collection of Consul Schiller, at Hamburgh, and that shortly afterwards it was introduced to the notice of English cultivators by that well-known trade grower, Mr. B. S. Williams, of Upper Holloway. It at once acquired an immense degree of popularity, and as the importations were from the first very large, it quickly became distributed throughout the country, and although we do not hear so much about it now as we did some few years ago, it is appreciated as much as it ever was. The snow white *P. amabilis* has been known to science upwards of a hundred years, for Rumphius figures and describes it in vol. iv. of his "*Herbarium Amboinense*," published in 1750; but it may be affirmed that up to the present moment no white-flowered plant, orchidaceous or otherwise, has been introduced that equals, much less surpasses it, the well-known *P. grandiflora* alone excepted, which may be considered of equal merit.

Several species, such as *P. Luddemanniana* and *P. rosea* are much smaller in their parts than those to which special attention has been directed above, and although not perhaps so desirable for small collections, are indispensable to those having any pretensions to

completeness. Several large-flowered species, with beautiful delicate rose-tinted flowers have within the last few years been introduced by Mr. Bull of Chelsea, but as yet they are too rare to justify the amateur in taking them in hand. The established kinds are so exceedingly good that they are quite sufficient for any ordinary collection, and it may also be added, that with a goodly number of plants, *P. amabilis* and *P. grandiflora* may be had in bloom during the greater part of the year.

The phalanopsids are natives of Borneo, Moulmein, Burmah, Philippine Islands, and Manilla, and therefore require for their successful cultivation a high temperature throughout the year. In the matter of warmth they do exceedingly well in a house, the temperature of which ranges from 70° to 75° during the growing season, which usually commences in March and terminates in November, and from 60° to 65° during the resting season, from November to the end of February. The minimum of each season represents the night temperature and the maximum the day temperature, when maintained by artificial heat. But throughout the year an additional five, or even ten degrees may be allowed during periods of bright sunshine, provided that during the summer season the house is properly shaded, and the atmosphere fairly charged with humidity. The hardiest of all the species at present in cultivation is the subject of the accompanying illustration, but to maintain it in health the temperature must not, during the winter season, fall much below 60°.

All the species are epiphytal; that is to say, they grow in their native habitats on the trunks and branches of forest trees, and one or two grow on masses of rock. Hence it may be inferred that they do not require a large mass of material, such as peat or sphagnum, for the roots to run into. They may, indeed, be grown upon blocks of wood, with or without moss attached, and suspended from the roof, and in shallow baskets; but, excepting newly-imported and small plants, the best results are obtained by growing them in pots prepared as I shall now describe. We will suppose it is desired to repot a medium-sized plant furnished with healthy roots. For a plant of this kind a six-inch pot will be the most suitable, and it should be prepared by filling it to within about two inches of the rim of the pot with rather large crocks and small lumps of charcoal. To make the surface moderately even, put a few smaller crocks on the top, and cover with a layer of sphagnum. The plant can then be placed in position, and have a mixture consisting of sphagnum moss, crocks, and small lumps of charcoal packed about the roots to form a mound some three inches or so above the rim, and over the surface spread a thin layer of sphagnum to give the work a neat appearance. More fully-developed specimens are, as a matter of course, put into pots proportionate to their size with larger pieces of crock and charcoal, and they are raised rather higher above the rim. When they are grown in baskets, the latter should be filled to about one-half their depth with crocks, and the base of the plant raised just above the upper edge. In transferring them from one pot to another, the loose material must be removed from about the roots; but in doing this they must not be injured; and when a root is found

adhering to a piece of crock, instead of detaching it, transpose the crock and all to the new pot.

In the matter of moisture, abundant supplies are required during the growing season, and at other times the material must be maintained in a nice moist state, without being in a constant state of saturation. They also enjoy a rather liberal degree of atmospheric humidity from early spring until autumn; but in this respect they do not differ materially from the *Ærides*, *Vandas*, *Saccolabiums*, and other orchids from the East Indies. Sponging the leaves with perfectly clean water two or three times a week is most beneficial to the plants, and the result will amply repay the small amount of labour involved. The species in cultivation are—

*P. amabilis*.—A superb species, the flowers rather larger than those of *P. Schilleriana*, pure white, the labellum marked with rose.

*P. amethystina*.—A pretty little species with small flowers, white tinted with rose and yellow.

*P. cornua-cervi*.—An interesting species, but of no particular value to cultivators.

*P. grandiflora*.—A magnificent species, differing from *P. amabilis* in having much longer leaves, and in the labellum being marked with yellow.

*P. intermedia*.—An interesting species with medium-sized flowers, shaded rose on a white ground.

*P. Lowi*.—A small-growing species, with pretty rose-and-white flowers.

*P. Luddemanniana*.—An interesting species, with the flowers of medium size, and marked with deep rose on a white ground.

*P. rosea*.—A small-flowered species, suitable only for large collections.

*P. Schilleriana*.—A grand species, the leaves large, beautifully marked with greyish-white, as shown in the illustration; the flowers range from two to three inches across, of a delicate rose-pink, with prettily-marked labellum, and are produced in large branched panicles. It is so thoroughly attractive, that it can have the heartiest recommendation.

## PLANTING BULBS IN THE FLOWER GARDEN.

BY J. E. SAUNDERS, ESQ.



WE have just been filling the flower-beds with spring-flowering plants and hyacinths, tulips, and other bulbs, and it has been suggested to me that a brief explanation of the manner in which our beds are planted may be useful to some of your readers. To me there is nothing very remarkable in the course we take, and some of your readers may be inclined to smile when reading what I have to say in reference to the matter; but we have such a beautiful display of flowers every spring, that my friends are usually struck with the appearance of the flower garden at that season, and are following the example

set them. I must beg of you to understand that it is not my intention to attempt to write a lengthy and systematic essay on spring gardening, and I must ask you to excuse me if my remarks are of a somewhat desultory character.

The course we take in filling the beds is, I must confess, rather an extravagant one; but the flower garden is not over large, and we are most anxious to have it as bright and cheerful as we can throughout the spring season as well as during the summer months. Moreover, it is only those beds within the range of view from the drawing and dining-room windows that are filled exactly as I shall describe. Every bed is filled with spring-flowering plants of some kind, but those at some distance from the house are planted with hardy things that can be multiplied at home by means of seed or cuttings.

That the beds shall present a pleasing appearance throughout the winter is a prime necessity, and for hiding the soil, and at the same time forming a green carpet, they are planted in the course of the autumn with such things as *Aubrietia deltoidea*, a very dwarf-growing plant, producing a dense carpet of purple flowers; *Alyssum saxatile compactum*, a greyish-leaved plant, growing a few inches higher than the preceding, and bearing bright yellow flowers, which form a solid mass all over the bed; *Iberis sempervirens*, about the same height as the Alyssum, and bearing pure white flowers; *Double Daisies*, the red, white, and pink varieties being the most effective; *Silene pendula compacta*, a free-growing annual, which attains a height of six inches, and becomes in its season solid with its pretty pink flowers; *Myosotis sylvatica*, commonly known as the Wood Forget-me-not, which has pale blue flowers, and attains a height of nine inches; and *Single Wallflowers*. We have these last in two colours; one known as the *Blood-red* has flowers of a rich dark crimson colour; and the other is known as *Tom Thumb*, and bears bright yellow flowers. The heights of the two varieties may be roughly stated as twenty and twelve inches respectively. In addition, some few of the beds are filled with *Cliveden Blue* and *Cliveden Yellow* pansies, which attain the same height as the ordinary pansies. Each bed is filled exclusively with one of the subjects mentioned above, excepting that it has a six or nine-inch band of *Golden Feather* or *Veronica incana*, which are the best golden and white-leaved plants respectively for spring bedding. The greatest distance at which all the plants are put apart is six inches; that is, from centre to centre, as they do not spread much until the spring, and I like the beds to appear well filled throughout the winter.

After the plants are put out, we proceed to fill the beds with hyacinths and tulips, and in a few instances with both, so as to insure two distinct displays; and in addition we put just inside the belt of *Golden Feather* or *Veronica* a band of crocuses. These are planted rather thickly in a double row, about an inch apart, and the result is a solid line of bloom. Mixtures are so effective, that I have no desire for anything better; and those who are anxious to proceed as economically as possible may plant them without any misgivings. The hyacinths and tulip bulbs, when arranged sepa-

rately, are planted about nine inches apart; but when both are put in the same bed the bulbs of each are planted twelve inches apart, and they are so distributed that the bulbs of the two classes of flowers combined are six inches apart all over the bed. We thus have two distinct displays irrespective of the bloom of the plants employed for carpeting purposes, which also contributes very materially to the attractiveness of the flower garden, for the hyacinths are nearly if not quite over by the time the tulips are well in bloom. The mixed hyacinths, sold in separate colours, which cost about a guinea a hundred, are employed because of their cheapness, and they answer very well. In planting them, each bed is filled with a distinct colour. Hyacinths in mixtures comprising all colours may be had, but when there are more than two or three beds they are not so desirable as those in separate colours. The single varieties are also preferable to those with double flowers. The mixed tulips were tried, and as they proved very unsatisfactory, we have discarded them. We grow varieties purchased under name only, the best for bedding purposes can be obtained for a very small additional cost. A large number of sorts has not been found necessary, and those grown most largely are of the double varieties. *Gloria Solis*, reddish scarlet, with yellow margins; *Purple Crown*, rich crimson; *Rex Rubrorum*, brilliant crimson scarlet; and *Yellow Rose*, bright yellow. And of the single varieties, *Duchesse de Parma*, crimson edged with yellow; *Queen Victoria*, white tinted with rose; *Thomas Moore*, reddish orange; and *Yellow Prince*, bright yellow. Here we have eight varieties, all of which are of excellent quality, and extravagantly showy, and procurable at prices ranging from five to seven shillings per hundred. *La Candeur* is the best of the double white tulips, but it is rather expensive; and, after all, white flowers are not of so much consequence at the time the tulips are in bloom as those of a high colour. There are, perhaps, a dozen other first-class bedding tulips, but the above-mentioned are quite sufficient to produce a really magnificent display.

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### TREE MEMORIALS OF DR. WATTS.



THE village of Stoke Newington, in common with many others in the suburbs of London, is rich in memorials of great and good men. The new thoroughfare called De Foe Road nearly marks the spot where Daniel De Foe wrote "*Robinson Crusoe*," and the mulberry-tree that grew in the garden in De Foe's time was known to many within the past few years, but will be known no more, for "improvement" has annihilated it. Here are memorials of Sir Walter Raleigh, of Fairfax, of Samuel Rogers, of Mrs. Barbauld, and of many others whose names will long be cherished; but there are none so distinct and striking as the memorials of Dr. Watts. In the year 1702, Dr. Isaac Watts succeeded Dr. Chauncy in the ministry at Mark Lane. He had previously acted as private tutor

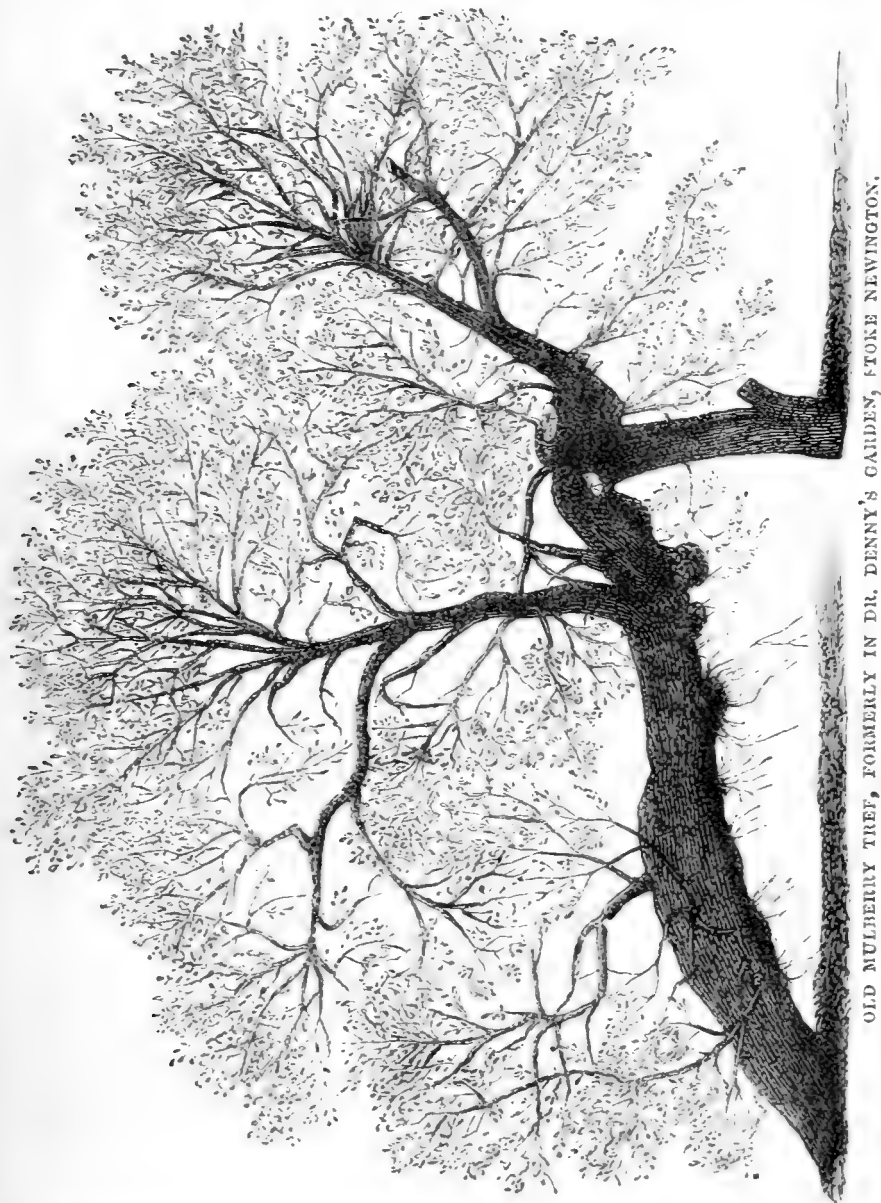
in the house of Sir John Hartopp, Bart., at Stoke Newington, and was known in that village as one of the most promising of dissenting



ministers, being then only twenty-eight years of age. In 1712 he was struck down by fever, and compelled to abandon the ministry for a time, in order to obtain needful rest. Then it was that Sir



Thomas Abney, a worthy citizen residing in Stoke Newington, invited him to partake of the quiet and comfort of his home, and Isaac Watts became as one of the family, and so continued for thirty-six years, ending his days in this agreeable retreat. Here he performed those literary labours that have made his name



renowned throughout the world, and in recognition of which the universities of Edinburgh and Aberdeen bestowed upon him the degree of Doctor in Divinity. It is not surprising, therefore, that Sir Thomas Abney's Park became, in an especial manner, associated with Dr. Watts's meditations and labours. The park, indeed, is

November.

gone, but many of its trees remain in the cemetery and the private gardens into which the builders long ago divided it, and some interesting scenes in the cemetery bear Dr. Watts's name as having been his favourite resorts.

The great cedar-tree is a true memorial of the pious poet. The spread of its branches cover a circle of about 300 feet, and its contour is tolerably perfect, though on several occasions within the past quarter of a century, heavy snow-falls, by suddenly overloading the horizontal branches, have torn some of the largest away, leaving serious wounds in the massive stem. The old mulberry was one of the most picturesque objects of its kind ever seen. It stood, or rather leaned, as represented in the figure, in the very centre of Dr. Denny's garden in the High Street, and, there can be no doubt, was originally within the boundaries of the park. This old tree, although in the most decrepit state, used to produce large quantities of the most delicious mulberries, but the last crop was gathered long ago. On the 21st of October, 1874, a great gale wrenched the old tree from the earth, and laid it prostrate—a magnificent ruin. It was then found that the principal branches had formed several distinct sets of roots, which passed through the old stem to the earth, so that at the time it was blown down it was actually renewing its youth. A figure of the tree as it appeared immediately after the storm was published in the *Gardener's Magazine* for February 27, 1875.

It is impossible to take any interest in the memorials that remain of such a man as Dr. Watts without in some way associating them with his works; and we seem to discover in his Hymns many a figure or allusion that may have been suggested to his mind by the rural beauty and quietude of Stoke Newington in those days “o’ lang syne.” It is not difficult, for example, to imagine that his 66th hymn, book ii., one of the best known of all, derived a special colouring from the charms of the scenery by which he was surrounded when composing it.

“There is a land of pure delight,  
Where saints immortal reign,  
Infinite day excludes the night,  
And pleasures banish pain.

There everlasting spring abides,  
And never-withering flowers;  
Death, like a narrow sea, divides  
This heavenly land from ours.

The noble 13th and 48th hymns, in the second book, with many more that might be named, seem equally touched with the suggestions of the locality, which in Watts's days was one of the loveliest in the neighbourhood of London.

PASSER-BY.

COX'S RED-LEAF RUSSET APPLE, of which trees are now being offered for the first time, by Messrs. W. Paul and Son, promises to take a high place amongst dessert varieties in use from December until February. The fruit is round, inclining to oblate, and of medium size; the skin is entirely covered with crimson-brown russet; the flesh tender, crisp, juicy, and richly flavoured.



THE ROYAL HORTICULTURAL SOCIETY'S TRIAL OF  
ZONAL PELARGONIUMS.

BY JOHN WALSH.



PROBABLY the most important of the trials in the Chiswick gardens of the Royal Horticultural Society during the past summer was that of the Zonal Pelargoniums. All the leading varieties, in addition to numerous new introductions, comprising, in all, several hundred, were, at the usual time, either planted in the open beds, or had a shift into larger pots, to be grown under glass. During the season they were at intervals subjected to a critical examination by the members of the Floral Committee, and others interested in these flowers, for the purpose of determining their relative merits. I had the opportunity of looking over the collection, and of instituting comparisons on several occasions when the plants were at their best, and made notes on all the varieties found to possess special merit. But to give anything like a full transcription of my notes would occupy too much space, and to many of your readers would probably prove wearisome, and I shall therefore content myself with pointing out a few of those which are indispensable in the gardens of all classes. One of the results of the trial was to prove that a goodly proportion of the established varieties still hold a leading position in their several classes, so that in most instances the varieties which will be mentioned as the best in the respective sections may be procured at the ordinary rate.

The undermentioned were especially noteworthy amongst those grown for their leaves, namely:—

*Macbeth*.—A fine golden zonal, vigorous in growth, the leaves large, with broad richly-coloured zone and bright yellow margin; one of the very best of its class for bedding.

*Countess of Ashburnham*.—A vigorous variety, with ample, richly-coloured leaves.

*Bright Eyes*.—An attractive golden zonal of free growth, with well-developed highly-coloured leaves.

*Mrs. Laing*.—A fine silver zonal, which is probably the best for pot-culture and for bedding. The leaves are large and flat, the zone is broad and high coloured, and the margin pure white.

*Albion Cliffs*.—A variegated variety, with pure white margin, growing freely, and one of the best for large beds.

*Miss Kingsbury*.—A most useful variegated variety, of compact branching habit. The variegation is of the purest white, and for bedding purposes generally it is one of the best in cultivation.

*Little Pet* also belongs to the variegated section, and, owing to its remarkable dwarf growth, it is of considerable value for carpet bedding and for the formation of marginal bands to small beds.

*Crystal Palace Gem*.—This is perhaps the most generally useful of all the golden-leaved varieties. It is vigorous in growth, very compact in habit, and the ample leaves are of a fine golden yellow

colour. There are two forms of this geranium in cultivation. One has plain yellow leaves, and the other has green leaves margined with yellow, and the former is of the two the most effective and therefore the most deserving of general cultivation.

*Creed's Seedling*.—A dwarf and exceedingly free-flowering variety, with greenish yellow leafage. It is one of the best for edging purposes.

*Golden Harry Hieover* belongs to the bronze zonal section, and in its way is most valuable. It is very neat and compact, and the leaves have a medium zone on a bright yellow ground. Without doubt it is one of the very best for small beds.

*Marcehal McMahon* is also a bronze zonal, but it is perfectly distinct from the preceding. It is of strong growth, and has large leaves overlaid with a broad chestnut-red zone on a clear yellow ground. Undoubtedly one of the best of the strong-growing varieties in its class.

*Emperor of Brazil* is also a fine free-growing bronze zonal, with large leaves. The zone dark brown, and the ground bright yellow.

*The Czar*.—A bronze zonal of splendid quality, and remarkable for the great breadth and intense colour of the zone. It is the darkest leaved variety in the section, and presents a striking contrast to those with more highly coloured leaves.

Mention of the best of the general collection of zonal varieties must for the present be reserved, but a few of the newer kinds are so good that it is desirable cultivators should become well acquainted with them with as little delay as possible, and a brief reference is here made to them.

*Alonzo*.—A grand variety. The flowers large and of superb form. The upper petals bright crimson, the lower petals reddish violet; the eye pure white, and of large size.

*Enone*.—A fine variety with orange-scarlet flowers, of good shape, and high finish.

*Ivanhoe*.—A superb variety. The colour orange-cerise, and the flowers large, well formed, and borne in well-developed trusses.

*Mrs. Jacoby*.—A distinct and beautiful variety. The colour cerise, shaded violet.

*The Moor*.—A capital addition to the list of dark varieties. The colour is a very deep velvety crimson, and the flowers, which are borne in excellent trusses, are of fine form.

The five zonals which are here mentioned are specially adapted for pot-culture, and the others are the finest in their respective classes for the flower gardens.

**DYEING MOSSES AND GRASSES.**—The following cheap recipe for dyeing moss or grasses of a beautiful green, appeared lately in the *Hamburger Gartenzeitung*. For a dark green take about half-a-pint of boiling water, into which put an ounce of alum and half an ounce of dissolved indigo-carmin. Dip the grass or moss in this mixture, shake off the liquid, and dry in an airy, shady place, or by the fire in winter. For a lighter green add to the above preparation more or less picric acid.

## PROPAGATION OF ROSES FROM AUTUMN CUTTINGS.

BY AN AMATEUR EXHIBITOR.



THE immense superiority of own-root roses over those budded upon the brier and manetti, was pointed out in the last issue of the *FLORAL WORLD*; and in giving a few directions for the multiplication of roses by means of autumn cuttings it is not needful to again refer to that point. These remarks will, therefore, be strictly confined to matters of detail.

In the propagation of roses from autumn cuttings, it must be borne in mind that as the cuttings will be inserted in the open borders, and be fully exposed to the weather during the winter, they must be of a substantial character. Small shoots consisting of two or three buds, such as may be struck during the summer with the aid of frames and hand glasses, are quite worthless. The first sharp frost after their insertion would loosen them so that, even if the worms did not drag them out of the ground, they would certainly not strike. The shoots selected for propagating purposes at this season of the year must be moderately stout, and the cuttings when prepared should range from six to nine inches in length.

In taking the shoots it is a capital rule to cut them off about six inches from the base, and then by the removal of from three to four inches of the soft wood at the point, and all but the two upper leaves, they will be ready for insertion in the prepared border. Cutting them close under the lower joint is, in some respects, preferable, but it is not of so much importance, as in the case of the cuttings of many other plants, and if the shoots are less than six inches long, when the tops have been taken off, it is not desirable to reduce their length by the removal of two inches or so of wood from the base. The best shoots for cuttings are those which have not flowered, and range in length from eighteen to twenty-four inches, and, as far as they can be obtained, must be selected in preference to all others.

A sheltered position should be set apart for the cutting bed, a border at the foot of a wall being preferable. And as it is not of much consequence whether it has a south, west, or east aspect, there will not be much difficulty, in the majority of gardens, in allotting a portion of a border at the foot of a wall to the purpose.

The preparation of the soil is not by any means a big task, as a very few words will suffice to show. Digging it over to a depth of ten or twelve inches will be the first step, and if it is at all close in texture, spread over the surface a good layer of river sand or other grit previous to the digging, and then well incorporate it with the staple. Break the soil up rather fine, and leave the surface fairly level, and when inserting the cuttings lay a plank down to prevent the soil being trodden into a pasty condition. The simplest way will be to put the cuttings in small trenches, cut neatly to a depth of three or four inches, according to the average length of the cuttings. As each trench is opened put the cuttings in an upright position,

and about two inches apart, and in filling in the soil be careful to make it thoroughly firm with the foot to prevent the possibility of the cuttings being loosened by frost or worms. If river or road sand is readily obtained, a small quantity may be sprinkled along the trench, previous to the cuttings being put in it, as the addition of sand will materially promote the production of roots. The trenches should be about twelve inches apart, to enable the cultivator to keep the weeds down with the hoe during the summer season.

It is intended the cuttings should remain in the bed until the following autumn, and until their removal they require very little attention indeed. One of the most important points in their management is to supply them with a sufficiency of water during periods of dry weather in the months of April and May, to maintain the soil in a nice moist state. Unless this is done a very considerable proportion will perish. During the summer the weeds must be kept down with the hoe, due care being taken not to loosen them in any way. In November they should be lifted, and be replanted if they are crowded; otherwise they should remain in the bed until the autumn following. In both cases strong shoots made during the summer must be cut back to the second or third bud, to encourage them to produce a few strong shoots the following season. After the second year the strongest can be planted in their permanent quarters; but those which have made more moderate progress should remain in the nursery-bed for another year to acquire strength.

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## WINTER MANAGEMENT OF THE GREENHOUSE.

BY THOMAS TRUSSLER, NURSERYMAN, EDMONTON, N.



ANY amateurs who can maintain the occupants of their greenhouse or conservatory in the most perfect health during the summer season, fail in keeping them in a presentable condition throughout the winter; and with a view to assist this class of cultivators, these remarks have been written.

In commencing to offer advice on the management of the greenhouse and conservatory during the winter, it appears desirable to state that the principal points to which the amateur should direct attention, are to afford the plants as much light as possible, to maintain the atmosphere in a healthy condition, by ventilating whenever the weather will admit of its being done; to water the plants carefully, and to avoid exposing them to a great or sudden change of temperature. This is written expressly for the guidance of those who have only one structure, otherwise it would be the duty of the writer to point out the importance of separating plants, such as the primulas and cyclamens, which require a genial temperature throughout the winter for the purpose of maintaining them in a progressive state, from the azaleas, heaths, and other hard-wooded plants, which ought not to be exposed to the effects of more fire-

heat than is really necessary for the exclusion of frost and the maintenance of a dry atmosphere. Even with one house only, much can with a little management be done to place these two classes of plants under conditions most conducive to their health. To separate the plants into two distinct groups, and put the hard-wooded things at one end of the house, and the soft-wooded things at the other, would answer very well so far as the health of stock is concerned, but it is not desirable. The appearance of the house would be so unsatisfactory, that there would be a very great difficulty in tolerating the arrangements for any length of time. The only arrangement that can be recommended, is to place all the plants requiring a free circulation of air about them upon the central stage in span-roof houses, and upon the back stage of lean-to's; and the others upon the side stages. When this is done, air is to be admitted by means of the ventilators in the roof only. The plants on the side stages will have quite as much air as they will require, without being exposed to cold currents, whilst those on the high stage will enjoy that free circulation amongst them so essential to their health.

The ventilation and heating of the greenhouse are points of prime importance; nevertheless, it is a matter of extreme difficulty to offer advice of real practical service to those who are in the most need of it. It is impossible to allude to them otherwise than in a general way; and inexperienced cultivators have necessarily considerable difficulty in applying to their own case directions of a general character. That air is essential to the health of plants is generally known, but the knowledge is often not turned to such good account as it might be. Instead of the ventilators being opened when air can be admitted with advantage to the structure, they remain closed for weeks together, because it is feared that the temperature will be reduced so much that the plants will suffer. As a matter of fact, the ventilators should be opened every day when there is neither rain, frost, nor fog. The extent to which they ought to be opened, and the length of time they should remain open, must be determined by the cultivator. Air should, however, be admitted as early in the day as possible, and the ventilators closed by two or three o'clock, to prevent the temperature falling too low. The temperature of the structures referred to may range from  $35^{\circ}$  to  $45^{\circ}$ , and with sun-heat it may be allowed to rise to  $50^{\circ}$ , without its being considered necessary to open the ventilators to an undue extent, or allowing them to remain open until late in the afternoon. On occasions when it is impossible to admit air without the temperature being reduced below the proper point, a fire should be started a short time before the ventilators are opened, and be kept steadily burning until they are closed again. During long periods of dull and rather damp weather, a fire should be lighted once or twice a week to dry up superfluous moisture, and the house be ventilated at the same time to allow the vitiated air to escape, and thus ensure a thorough change in the air of the house. In the matter of keeping out the frost, the weather must be closely studied, and when it is feared that a sharp frost will be experienced in the

evening, the fire should be lighted in the afternoon, and be allowed to burn just sufficiently to warm the water in the pipes, or the brickwork forming the flues, as the case may be; and in the evening it can be started on briskly, if necessary. What the amateur must particularly guard against is the very common—and it must be added, most hurtful—practice of allowing the thermometer in the house to go down to the freezing point before lighting the fire, and then, with the aid of the fire-heat, to push the temperature up some ten degrees or so higher than is necessary. The sudden change is most injurious to the plants, as also is a comparatively high temperature during a sharp frost. The temperature on a frosty night ought to exceed  $40^{\circ}$ .

Watering greenhouse plants during the winter season requires much care, both as regards the time and manner of applying the water. A fixed rule should be made that all watering be done immediately after breakfast, and, when practicable, during clear bright weather. The plants will not require large supplies of water; neither must the soil, with certain exceptions, be allowed to become dust-dry, and remain so for any length of time. Plants differ so much in their requirements, that no precise directions can be given; but it is a capital rule to allow the soil to become rather dry, and then give sufficient water to well moisten the ball, and after this has been done, not to apply any more until it has become dry again. The water must not be thrown about in a careless manner, and all pools that form on the floor should be mopped up after the watering has been completed.

Over crowding must be avoided, and the amateur, who, in the course of the autumn, overhauls his stock and makes an end of plants of but little use, acts with wisdom. To have the glass in a thoroughly good condition is of importance, for the plants require every ray of light they can possibly have, and a mere intimation of this fact will suffice to induce amateurs to set to work and thoroughly wash the glass of the greenhouse, if it has not been done already.

## THE EMBELLISHMENT OF FORECOURTS.

BY JOHN WALSH.



THE more liberal employment of evergreen shrubs in the embellishment of forecourts of villa residences has been strongly advocated in the pages of the *FLORAL WORLD* upon more than one occasion. As supplementary to what has been already said, I would like to embrace the present moment for pointing out a few subjects, which in the course of my experience have been found eminently suitable for the purpose.

I will not occupy space by dwelling at length upon the satisfactory results which invariably follow the planting of these things in sufficient quantities to produce a distinct effect, but I would ask

those readers who have the opportunities for so doing, to make a tour of observation through a suburban district inhabited chiefly by the well-to-do middle classes, and to institute a few comparisons in the course of their rambles. I ask them to do this because it is impossible to proceed far without being struck by the tremendous difference in appearance between the forecourt furnished principally with a good selection of shrubs retaining their leafage throughout the winter, and those which are filled with a mixture of evergreen and deciduous shrubs, hardy herbaceous plants, and the omniscient standard rose trees, supplemented in the summer season by bedding plants. Certainly the impression thus received will be much stronger than it would be possible for the most powerful pen to produce. I have in my mind's eye at the present moment, the forecourts of two villa residences, which are as nearly equal in size as they well could be, and both are large enough to afford abundant opportunities for the display of taste in the arrangements of their furniture. As a matter of fact they stand side by side, but, so far as appearance goes, they are as far apart as the north from the south pole. In one we have richness and in the other extreme poverty, although the amount of money expended in the course of a period extending over four or five years does not probably differ very materially. Both houses stand about a hundred feet back from the road, and have a carriage drive, with a circular breadth of turf in the middle of the space, and a border on the right and left. In the one we find the borders filled with a motley assemblage, comprising deciduous shrubs, the lilac and laburnum largely predominating, a few laurels and arbor vitæ, and in front hardy herbaceous plants, good, bad, and indifferent, and in the summer we shall find geraniums, verbenas, petunias, and other bedders.

The centre of the turf is occupied with a large bed, filled some four and five months with summer bedding plants, and during the remainder is bare and unsightly. Round the edge of the turf are, at regular intervals, standard rose trees, which present a fairly attractive appearance for about six weeks, are just bearable for another four months, and for rather more than six months they are as unsightly as a similar number of birch brooms partly worn out, and the handles stuck in the ground, would be. In the other forecourt the borders are filled to within eighteen inches of the grass verge with choice evergreens, and the remaining space is occupied from May to October with summer bedders, and on their removal in the month last mentioned they are replaced with hardy plants, that present a bright appearance during the winter, and produce a good display of flowers in spring, and, in addition to these, a few hyacinths and tulips are dotted along the front border; the hyacinths six inches apart, in a line six inches from the edge of the verge, and the tulips the same distance apart, in a line six inches behind the hyacinths. The breadth of turf, as in the other garden, has a large bed in the centre, but its occupants are choice evergreens, and it has a space of the same width as that along the front of the borders for flowering plants to brighten up the place with a bit of colour during the spring and summer. And instead of the standard roses,



columnar and round-headed evergreens are arranged alternately about ten feet apart, eighteen inches from the side of the drive.

For forecourts of lesser extent than those to which attention has been directed, evergreens are of even greater value, and in every case the small circles of turf studded with rose-trees may be well replaced with a bold mass of shrubs, enclosed with a broad band of ivy. By this arrangement all the labour and expense incidental to the keeping of the grass in proper order is made an end of, and an important step taken towards making the forecourt immensely attractive throughout the year.

There is no lack of good things suitable for the embellishment of the forecourt and the lawn of a villa residence; indeed, in glancing through a trade catalogue one is struck by the large number in every way suitable for the purpose, and moreover procurable at a reasonable rate. Amongst the green-leaved shrubs we have first of all the female and male forms of *Aucuba japonica viridis*. Both are remarkably good, and specially adapted for town gardens, and if they are planted within a short distance of each other, the female form will annually become loaded with its large deep scarlet berries. Several *Berberis* are exceedingly effective, notably *B. aquifolium*, cheap and common, but most useful for planting in the front lines. *B. Darwini* and *B. dulcis* are very bright and elegant in appearance, of free growth, and during the early part of the summer produce a profusion of bright yellow flowers. The tree-box is rather too dull, but neat pyramidal examples are useful for front lines. The new broad-leaved variety, known as *Buxus sempervirens latifolia nova*, is the most desirable. *Cotoneaster simmonsii* is not, strictly speaking, evergreen; but it retains its leaves during the greater part of the winter, and bears a profusion of redberries, which change to a bright red colour in October; and as the birds are not particularly partial to them, they usually remain on the plants throughout the winter. It is of slender, upright growth, and well suited for second or third rows in borders and for centres of beds. *Crataegus pyracantha*, known far and wide for the rich colour of its berries, which are produced freely in large clusters, is well suited for beds and borders when grown in the form of standards. *Euonymus japonicus* succeeds admirably in towns, and for that reason deserves mention; but it is not good enough for general planting. Several hollies can be recommended, amongst them the yellow-berried variety, *I. aquifolium fructo-luteo*, is very attractive during the winter. Of laurels, the *Caucasian*, the *Colchican*, and the *Round-leaved* are the best; and as they have bolder leafage than any of the other subjects available, they are useful for the sake of contrast, especially for planting towards the back of the borders. The *Portugal laurel* is also useful for front lines. *Rhododendron ponticum* is also deserving of notice, for it does well in suburban districts, and throughout the year it is equal in appearance to the majority of evergreens; and when in bloom it quite surpasses them. This rhododendron does not require peat, but the soil must not be close and heavy.

Of the variegated shrubs, the most useful are the variegated and spotted-leaved forms of *Aucuba japonica*, the *Silver-striped* and



*Gold-striped Box*, *Euonymus japonicus latifolius variegatus*, *E. japonicus latifolius aureo-variegatus*, *E. japonicus flavescens*, useful for front lines. Of the hollies, which are unquestionably the most beautiful of the hardy variegated shrubs, the most attractive are *Golden Queen*, *Silver Queen*, and *Waterer's*. These may be planted in front, middle, or back rows, according to their size. They are so good, especially the two first-mentioned varieties, that they cannot well be planted too liberally.

Very few of the coniferous trees are suitable, for the majority require a pure air and plenty of room for their development. The best are, *Cephalotaxus Fortunei*, *Cupressus Lawsoni*, *C. Lawsoni erecta viridis*, probably the most ornamental of all the coniferous evergreens for small gardens. *Juniperus chinensis*, *Libocedrus decurrens*, *Taxus baccata aurea* (the Golden Yew), *Thuja Lobbi*, *T. occidentalis* (American Arbor-vitæ), *T. orientalis* (the Chinese Arbor-vitæ), *T. orientalis aurea*, a beautiful dwarf variety, which puts on a golden hue in the early part of the year; and *T. orientalis elegantissima*, a golden form, rather more columnar in habit than the last-mentioned; *T. Warreana*, one of the finest of the Arbor-vitæ in cultivation.

With the foregoing, a few deciduous shrubs remarkable for the beauty of their flowers may be planted, but they must be sparingly introduced, and in a general way neat standards are preferable to bush specimens.

## THE INTERNATIONAL EXHIBITION OF POTATOES.

BY A NORTHERN AMATEUR.



THE International Exhibition of Potatoes at the Alexandra Palace, on September 28 and 29, was unquestionably one of the most interesting and important of the displays of horticultural produce of the season, and it is reasonable to infer that a considerable proportion of the readers of the FLORAL WORLD will be interested in a brief account of it. This, it may not be amiss to state, was the second of the contests at Muswell Hill amongst potato growers, and, like the one held last year, it was under the direction of an independent committee. These contests were promoted by a number of potato growers and potato fanciers, who, recognizing the immense importance of the tuber commercially and otherwise, felt that an annual exhibition would be most beneficial, because it would afford a healthy stimulus to cultivation, and give the public generally an excellent opportunity for becoming acquainted with the best varieties in cultivation. So far the exhibitions have more than realized the expectations of the most sanguine of the supporters, and their influence is already felt throughout the length and breadth of the land. The exhibition of September last was in every way vastly superior to that of the preceding year, for the number of dishes was considerably larger, the potatoes (taken as a whole) were of a better

quality, and the arrangements were more thoroughly satisfactory. The latter details were, indeed, so well carried out, that the committee, of which J. Abbiss, Esq., J.P., is president; Mr. Shirley Hibberd, vice-president; Mr. J. Crute, treasurer, and Mr. P. McKinlay, honorary secretary, may be heartily congratulated on the success attendant on their labours. The show was arranged in the Concert Room, and the potatoes, consisting of nearly three thousand dishes, were placed upon six broad tables extending the whole length of the building. A line of neat plants with ornamental leafage was placed down the centre of each table, and on the right-hand side, Mr. Amies, of Islington, staged specimens of several kales, maize, and of various garden and farm roots, to show the value of his "Patent Manure" as a fertilizer; and on the opposite side, Messrs. J. Carter and Co., of High Holborn, staged an attractive collection of potatoes, gourds, and well-coloured plants of the Chilian beet, and the general effect was remarkably good. The display was, in fact, quite as attractive as an exhibition of autumn fruits, for all the tubers were shown in dishes of the same size and pattern, and in a perfectly clean condition.

Chief amongst the prizetakers were the cultivators north of the Tweed, and one of the Scotch exhibitors succeeded in winning no less than six of the seventeen first prizes, five of them being in important classes for collections. The success of the Scotchmen may in part be attributed to the marked manner in which they were favoured this year by the weather. Whilst the potatoes in England, especially those in the south, west, and midland counties, were nearly burnt up by the intense heat of July and August, and the growth prematurely checked, the crops throughout Scotland were enjoying weather most favourable to the production of heavy crops of tubers of splendid quality. The English growers, however, did well, and some of the samples submitted by them were quite unsurpassed in quality and finish. The competition in all the classes was remarkable for its severity, and in many of them there were upwards of thirty entries.

The class for twenty-four varieties was the most important in the exhibition, and the first prize, of £12 12s., was awarded to Mr. Porter, of Old Meldrum, Aberdeenshire, for a collection which has probably not been surpassed since potatoes have received due recognition at the hands of managers of horticultural exhibitions. The varieties were perhaps the finest that could have been selected for exhibition purposes, and an enumeration of them will be of service to those who intend growing for exhibition next year, but are not conversant with the best varieties for that purpose. They were—Red Emperor, a red round, very handsome, and of good quality, and productive. Model, a white round, rather flat, large, and of good finish; it is a splendid potato for main crops, especially on rather light soils. Rector of Woodstock, a white round, and a gentleman's potato in the strictest sense of the word. The tubers are of medium size, but perfect in shape, and the flesh dry and mealy and the flavour most excellent. It is a rather light cropper, and requires good soil. Rintoul's Early Don, a useful second early

round. Porter's Excelsior, a white round, rather flattish, but of splendid form. It is perhaps the most handsome of its class, and in other respects is a desirable potato, for it crops well, and is of good quality when upon the table. This variety, the result, of careful selection, extending over several years, on the part of the exhibitor, was sent out by Messrs. J. Carter & Co. in the course of last spring, and may now be obtained in the ordinary course of trade. Breesee's Prolific, Climax, Extra Early Vermont, and Snowflake, four of the best of the American potatoes; Scotch Blue, one of the best of the round potatoes with purple skin; Ashtop Fluke; Baron's Perfection, Albion, Early King, three excellent kidney potatoes, now fairly well known; Crimson Walnut-leaf, and Select Blue Ashleaf, two coloured kidney varieties, good of themselves, and useful by way of contrast; Victoria, a well-known and valuable variety for main crops; Champion, a useful early kidney variety of the Ashleaf type, were all represented, and in addition the collection contained samples of Golden Eagle, Purlie, Grampian, and Shand's Perfection, three local varieties, which appeared to be well worthy of general cultivation. Mr. Pink, gardener to Lord Sondes, Lees Court, Faversham, was second, with a collection but little inferior to that from Mr. Porter. Amongst the varieties represented were Snowflake, Late Rose, Oneida, Early Goodrich, Vermont Beauty, and Ruby, all of which are of American origin, and on some soils come remarkably good. Rector of Woodstock; Bountiful, the most handsome of all the red kidney varieties; Model; Hundredfold Fluke, a kidney variety, the tubers streaked with red on a yellow ground; Birmingham Prizetaker, a yellow-fleshed potato, exceedingly handsome in appearance, but close and waxy in texture and quite indifferent; Giant King, a useful second early kidney, and Bryanstone Kidney, were also well represented.

In the class for eighteen varieties, the first prize, a silver cup of the value of £10 10s., offered by Messrs. Sutton and Sons, of Reading, was awarded to a Scotch cultivator, Mr. Donaldson, Keith Hall, Inverary, to a collection in every way first-class; and amongst the most successful competitors in the other classes were Mr. Finlay, of Banbury, Mr. Ironsides, Mr. Minchin, Mr. Lumsden, Bloxholm Hall, Mr. Littlejohn, Mr. Carwell, High Street, Lewes, Mr. P. McKinlay, and Mr. Bagerley, of Newark. It would occupy too much space to particularize the collections, and therefore it must suffice to say that all collections to which prizes were awarded were exceptionally good, and it may be added that a number of collections which were unrecognized by the judges were so good that at any ordinary horticultural exhibition they would have placed the exhibitors at the head of the prize list. As indicating the respective merits of varieties, it may be added in conclusion that in the class for a single dish of any white round variety, that of Porter's Excelsior was awarded the first prize; in the class for any red round variety, Carter's Main Crop was the best; and the best dish of any white kidney was that of Devonshire Kidney; and of any red kidney the best was that of Extra Early Vermont. In all the classes for single dishes, between twenty and thirty dishes were staged.

Several new varieties were exhibited, and some of them were considered to possess so much merit that certificates of the first class were conferred upon them. The certificated varieties were as follows :—

*Alexandra*, W.K.—Raised by Mr. P. McKinlay, Beckenham. A neat white tuber of fair size, in form oblong, narrowing to the nose, and almost long wedge-shaped ; colour clear tawny white, with silky texture, and eyes quite inconspicuous ; flesh white, dry, mealy. First-rate.

*King of the Kidneys*, W.K.—A very distinct and fine variety of the fluke class, raised by Mr. Clark, of Cranemoor, Christchurch. It is a grand cropper of fine quality ; handsome in form, the flesh snow-white, light in texture, mild in flavour, and extremely elegant.

*Superior*, R.K.—This was shown as an American variety by Mr. Barker, of Littlehampton. It is a large kidney-shaped tuber equally rounded at both ends, the skin smooth, the colour dull purple red, distinct and handsome.

*Garibaldi*, R.K.—A handsome red kidney, shown by Mr. Richard Deane. The colour is purple-red, the form neat and clean, looking well for the market.

*International Kidney*, W.K., was a handsome variety shown by Mr. McKinlay. It was in the style of Ashleaf ; colour tawny white, with a slight tinge of purple in the eyes.

*Lye's Favourite*, W.R.—A show potato in the way of Wellington, raised by Mr. Lye, of Cliffe Hall, Devizes. It is nicely finished, and the colour is clear amber white, with red patches about the eyes.

*Purity*, W.K., is a finely-finished egg-shaped tuber with ivory skin, and the blue tinge at the heel, which indicates alliance with the Lapstone breed. It was shown by Mr. Charles Turner, of Slough, who describes it as of the finest quality, a great cropper, and free from disease.

## CHOICE NOVEMBER FLOWERS.

BY ROBERT OUBRIDGE,

Church Walk Nursery, Stoke Newington, N.



COMPLAINTS are often made of the scarcity of flowers during the month of November, although, as a matter of fact, there are many good things which may be made available for the decoration of the conservatory during that dreary month, were they turned to proper account.

There is, for example, the chrysanthemums innumerable, bouvardias, cyclamens, primulas, salvias, zonal pelargoniums, winter flowering heaths, and the berried solanums, all of which may be had in full bloom without the aid of the forcing pit ; and with the last mentioned structure several other good things may be had, chief among them being the Roman hyacinths.

The foregoing subjects are certainly quite sufficient to make a most attractive display, and although a special course of culture is, in most cases, necessary to have the plants in bloom, the details are not difficult to understand or carry out. For example, to have primulas in bloom, it is simply necessary to sow the seed a little earlier than usual, and to insure a good display of geraniums, the cultivator has only to pot up the plants in the early part of the summer, shift on as may be required during the season, and to remove the flower-buds as fast as they make their appearance, until about the middle of September, to prevent the plants being exhausted before the season in which they are required in bloom. I should like amateurs to devote more time and attention to the cultivation of plants that may be had in bloom during November and the two following months, for in these months there are no flowers out-of-doors, and a bit of colour under glass and in a genial temperature is capable of affording an immense amount of pleasure, especially to those who are unable to go out-of-doors excepting when the weather is dry and open. To afford the amateur all the assistance I can in the matter, I will point out the plants most suitable for the decoration of the conservatory during the ensuing months, and at the same time will give brief directions for their cultivation, to insure their flowering at the desired moment.

BOUVARDIAS are very attractive and the flowers are most valuable for bouquets. Plants raised from cuttings struck in March will, with good culture, make nice bushes by the autumn; but the best course for the amateur to take, will be to begin in March with plants raised from cuttings the previous autumn, and nicely established in small sixties. They should be first shifted into large sixties, and, to afford room for a moderate quantity of new soil, reduce the ball of soil moderately. From these pots they must be shifted into six-inch pots, and then be transferred to others eight inches in diameter. They are in every instance to be repotted when the pots occupied are filled with roots, and not before. A warm pit will be the most suitable place for them until the end of May, and after that time they can be grown in an ordinary frame. They must be regularly stopped until the end of August, when it must be discontinued, and the stock removed to the greenhouse. Moderately liberal supplies of water and an occasional syringing are needful for the maintenance of the plants in a healthy condition. A mixture of equal parts turfy loam, fibrous peat, and leaf-mould or manure, forms a most suitable compost. *B. Vreelandi* and *B. Hogarth*, two of the most useful varieties grown, may be planted out in a bed of soil early in June, and if they are regularly stopped up to the time mentioned, the middle of August, and lifted early in September, they bloom superbly throughout the autumn.

CARNATIONS of the tree or perpetual-flowering section are of the utmost value, for they are not only highly ornamental when grouped with other plants, but they are also most useful for supplying cut flowers for button-hole and hand bouquets. In February or March select healthy shoots, cut them close under the third joint, remove the lower pair of leaves, and then insert them singly in thumb-pots

filled with sandy peat. The pots to be shut up in a close moist heat, the best place being a cucumber frame or melon pit. Immediately they are nicely rooted, shift into three-inch pots, and in a week or ten days nip out the point of each plant, to encourage the production of side-shoots. In a very short time they will commence to break freely, and as soon as the new shoots are an inch or so long they must be removed to a warm corner of the greenhouse. If allowed to become pot-bound at this stage, they will receive a severe check, therefore examine them occasionally, and when the pots are well filled with roots, shift into six-inch pots, and remove to a cold frame. About the middle of July remove to a bed of coal ashes out-of-doors, and as soon as they are well rooted supply with weak liquid manure, until they are taken to the greenhouse about the middle of September.

CHRYSANTHEMUMS are so easily grown that they should form the chief furniture of the conservatory in November. To have the most sumptuous display possible, is not a difficult task even for the amateur with but limited means, so far as plant-growing is concerned. First of all, some of the exhibitions should be visited during the ensuing season, and notes made of any of the varieties represented by plants that are especially attractive; and, as a matter of course, the most distinct, richly-coloured, and compact-growing varieties should be selected. Those who have no opportunity for acting upon this advice, may be referred to the selections which usually appear in the *FLORAL WORLD* after the exhibitions are over. In March, or April, procure a stock of plants nicely rooted and in three-inch pots. Those who have a few old plants from which to obtain a supply of cuttings, may propagate a stock in March with but little difficulty, as the tops of the young shoots will then strike very freely, with or without bottom-heat. They may, indeed, be struck in a cold frame. The usual routine of repotting at intervals must be followed; and all that I shall say upon this point is to recommend the repotting to be done before the plants become much pot-bound, and to employ for the last shift eight-inch pots for the pompon varieties, and ten-inch pots for the large-flowered kinds; to use a compost consisting of sound turfy loam, to which a moderate quantity of well-decayed manure has been added, and to press the soil firm. They require stopping about three times, which must be done while the shoots are quite soft, and the last stopping to be not later than the middle of June for the large-flowered varieties, and not later than the middle of July for the pompones. The pots must be stood upon a hard surface, and be liberally supplied with water. As trained plants are of but little use for the conservatory, the training should consist simply in putting a few stakes to them a short time after the last stopping, to afford support to the shoots as soon as they require it. The pompones are the most useful for the amateur.

CYCLAMENS bloom freely late in the autumn, when strong corms are selected and repotted early in July. After the repotting, they must be encouraged to start, by being placed in a frame where they can be kept rather closer; the soil must be maintained in a mode-

rately moist state until the leaves make their appearance, when the supply of water must be increased. Some time about the middle of August remove to a warm corner of the greenhouse, and the result will be a nice display of flowers in November.

HEATHS flowering in the autumn are so distinct that they well deserve to be grown in moderate numbers. The most useful are *Erica gracilis autumnalis*, *E. Caffra*, and *E. hyemalis*. Heath should be potted in sandy peat, and be placed out-of-doors during the summer season. In repotting, press the soil very firm, and exercise great care in watering, so that the plants do not suffer from drought, or from a too liberal supply. When indoors, an airy position is the most suitable for them.

HYACINTHS.—The small-flowered Roman hyacinth can be had in bloom by the early part of November, with the aid of a forcing-pit or plant stove. To insure their flowering thus early, pot the bulbs, in five or six-inch pots, three or four bulbs to each, by the end of August, or early in September; plunge them in the usual way; and at the end of September remove from the plunge-bed to the forcing-pit. Partly plunge the pots in a hot-bed, or stand them upon a warm surface to promote a vigorous root action.

PRIMULAS are of great value for flowering in November, and with the aid of an ordinary frame a good stock may be produced, without a very great tax upon the resources of the amateur. For autumn flowering the seed must be sown in March, the seed-pans placed upon a brisk hot-bed, and the plants should be kept in a warm frame until they are established in the small sixties into which they are put from the seed-pans. Shift into five-inch pots as soon as they become moderately pot-bound, and keep in a frame during the summer season. The white and red varieties should be grown in about equal proportions, and care taken to procure seed from a good strain.

SALVIAS are exceedingly attractive when nicely flowered. The best for conservatory decoration in November is *S. splendens*. Select autumn-struck plants early in April, and shift them on as fast as they require more root space, until they are put into eight-inch pots, in which they should bloom. Stop at intervals until about the middle of August, and let them have a sunny position out-of-doors throughout the summer.

SOLANUMS are most useful for their brilliant red berries. To have nice plants the seed must be sown in February, and the plants be grown on freely under glass until the autumn. Plants that are kept over a second year may be placed out-of-doors for the summer season. As the cultivation of these plants has been described at considerable length in previous issues of the FLORAL WORLD, I shall not enter into the cultural details; but I would strongly advise the amateur to grow a dozen or so of good plants, and to keep them until they become large bushes, as they are then wonderfully attractive.

ZONAL PELARGONIUMS present a very brilliant appearance during the autumn when nicely flowered, and as by a little management they may be made to bloom nearly as freely in the autumn as at any



other season of the year, the amateur will at once see how valuable they are. The main points are to take in hand, early in April, plants nicely established in three-inch pots, to repot them twice, the first shift to be into five-inch pots, and the second to be into eight-inch pots, as soon as they are thoroughly established. They must be stood upon a bed of coal ashes out-of-doors, and stopped at intervals, the last stopping to be about the middle of August. After arriving at this stage, the buds must, until the middle or end of September, be pinched off as they make their appearance. About the middle of the month last mentioned place them indoors, and in a warm corner of the greenhouse.

## PROPOSED RECONSTRUCTION OF THE ROYAL HORTICULTURAL SOCIETY.

BY LORD ALFRED CHURCHILL.



THE question of reconstructing the Royal Horticultural Society is beginning to attract attention. It is high time that it should do so, and that some definite scheme should be prepared before the annual meeting of the society in February next. If the horticulturists throughout the country could only agree upon the principles on which this could be best effected, it would materially strengthen the hands of the Council in their negotiations with the Commissioners. It is the belief that the society is past resuscitation that has induced the Commissioners to treat it in the cavalier manner they have done lately.

I beg to enclose the outline of a scheme as a basis on which this reconstruction could be effected. In doing this, I have no wish to put it forward as the only one likely to answer; it is solely my own idea which I beg to submit for consideration, in conjunction with others that may be proposed:—

1. Bye-laws to be altered.
2. Fellowships, £2 2s. No entrance fees.
3. Associates, £1 1s.
4. Gardeners in the employment of Fellows, 10s. 6d.
5. All voting power to be confined to Fellows paying £2 2s.
6. Provincial shows to be encouraged.
7. Quarterly journal to be published, and supplied gratis to Fellows. Associates to pay half-price.
8. Fellows, Associates, and subscribing gardeners to have free admission to Chiswick Gardens, and to all shows, either in the provinces or in London, given or promoted by the Royal Horticultural Society.
9. Fellows and Associates to have the power of admitting friends to Chiswick, either by order or personally.
10. Provincial Horticultural Societies subscribing to the Royal Horticultural Society £5 5s. per annum, to receive two silver and



two bronze medals; also copy of journal. Ditto subscribing £3 3s., to have two bronze medals and journal only; and so on for every five or three guineas subscribed.

11. The President or Secretary of subscribing societies to be an *ex officio* Fellow of the society during the time he may continue to hold his office, and to vote at all meetings on behalf of his society.

12. The Secretary of the Royal Horticultural Society to open communications with foreign Horticultural Societies, and to publish a precise copy of correspondence in journal.

13. Shows and meetings to be held in London by arrangement with Her Majesty's Commissioners.

14. Scientific committees to be held as at present, and verbatim reports of the proceedings to be published in the journal.

## PROPOSED NEW CLASSIFICATION AND NOMENCLATURE OF NARCISSUS.



R. SHIRLEY HIBBERD has lately illustrated his ideas of botanical nomenclature by an arrangement of Narcissus. He has systematically opposed the custom of naming plants "commemoratively" and "geographically," contending that botanical names should be descriptive, so as to afford information as to the characters of the plants to which they are applied. In preparing his monograph on the ivies, he adopted the plan of providing species and varieties with names suggestive of their more distinctive features; thus *Hedera Glymi*, so named in honour of Mr. Glym, became *Hedera tortuosa*, its principal characteristic being a twisted leaf. The revision of Narcissus has been submitted to the Linnæan Society, and objected to, on the ground that names once adopted are never to be disturbed, that is to say, so far as this society is concerned there shall be no improvement in botanical nomenclature, although its absurdities move the laughter of the world. But common sense will prevail, and not even the Linnæan Society can bar the way, however anxious it may be to regulate the language of the world by a red-tape of its own. As regards its merits, Mr. Hibberd's new nomenclature of Narcissus may be good, bad, or indifferent; it is not for us to say; but when it is declared that in scientific matters, the way of the Medes and Persians is to prevail, it is time to protest that knowledge grows from more to more.

Mr. Hibberd arranges the Narcissi in three groups, those having but one flower constitute group 1, *Uniflos*. Those with more than one, and less than six, group 2, *Pauciflores*. Those bearing more than six, group 3, *Multiflores*. The new names can only be appreciated by those who are familiar with the flowers, and therefore we shall not attempt in this summary to justify them by arguments. In the following list the old names are in italics, and the new names in small capitals, and there follows in each case a garden name in English, which is the equivalent of the new botanical name proposed:—

Group 1, *Uniflos*—*Bulbocodium* is catalogued as CORBULARIA, the Basket narciss. *Pseudo-narcissus* has for its new name FIMBRIO-TUBATUS, the Fringed-trumpet narciss. *Incomparabilis* is renamed VASIFORMIS, the Vase-shaped narciss.

Group 2, *Pauciflores*—*Poeticus* becomes ANNULATUS, the Ringed narciss. *Calathinus* is REFLEXUS, the Reflected narciss. *Poculiformis* retains its old name, POCULIFORMIS, the Cup-shaped narciss. *Macleai* is renamed CYLINDRICUS, the cylinder narciss. *Olorus* is renamed GRAMINIFOLIUM, the Grass-leaved narciss. *Juncifolius* remains unaltered, save in form, JUNCIFOLIUM. *Dubius* gives place to GALANTHOIDES, the Snowdrop narciss. *Gracilis* is renamed (by the restoration of an old name) ANGUSTIFOLIUS, the narrow-leaved narciss. *Intermedia* becomes

UMBELLATUS, the Umbel-flowered narciss. *Jonquilla* remains JONQUILLA, the Rush-leaved narciss. *Viridiflorus* remains unchanged, save in form, VIRIDIFLORENS, the Green-flowered narciss. *Elegans* is renamed STELLATUS, the Star-flowered narciss. *Serotinus* gives place to NUDIFLORENS, the Naked-flowered narciss, the flowers appearing without the leaves. *Canariensis* is renamed MINIMIFLORENS, the smallest-flowered narciss.

Group 3, Multiflores—*Tazetta* is placed under the old garden name, POLYANTHUS, the many-flowered narciss. *Pachybolbos* is renamed ROTUNDIFLORENS, the Round-flowered narciss. *Broussonetti* is renamed CAMPANULATUS, the Bell-flowered narciss.

Two reputed species are suppressed, namely, *Triandrus*, which is regarded as a variety of *Calathinus*, and renamed REFLEXUS-CON-TRICTUS, the constricted or very much Reflected narciss; and *Biflorus*, which is regarded as a variety of *Poeticus*, and renamed ANNULATUS-BIFLORENS, the two-flowered Ringed narciss.

## CULTIVATION OF THE LILY OF THE VALLEY IN GERMANY.



WRITER in the *Hamburger Gartenzeitung* gives some particulars of the raising and forcing of the Lily of the Valley in the establishment of E. C. Harmsen, of Hamburg, where it forms one of the principal objects of culture. It is in this and other nurseries in Holstein, not far distant from Hamburg, that the Lily of the Valley is cultivated in vast quantities for export. Millions of crowns, is it stated, are annually sent out from the one establishment named. The soil in which it is grown is a sandy loam. In autumn the ground is prepared by trenching to a good depth, and liberal manuring with rotten stable dung. It is then laid out in beds about four feet wide, with intersecting paths a foot wide. Six rows of plants are put in these beds, in furrows three to four inches deep, or so deep that the beds are covered with at least an inch of soil. When time is of importance, or the soil is rather moist, it is customary to take out the soil from the first bed to the required depth and wheel it to the side of the one to be planted last. The crowns are then distributed regularly over the surface, and the soil from the next bed thrown over them. After the surface of the soil is hard enough to admit of its being trodden upon, the beds are mulched with rotten dung, to nourish the plants when growth commences in spring, and also to act as a protector from frost during the winter. This is all there is to be done the first season, and nothing but weeding the second and third year is necessary till about the middle of October of the third season, when the plants are ready to lift. The labour of lifting and sorting the large flowering roots from the smaller ones is quickly performed. The former are stored away in a cold house after shortening the fibrils, and the latter ranged in layers and tan-pits. For early forcing, the strongest and ripest sets are selected. The bed of a propagating-house with bottom-heat has a layer four inches thick of sand, into which the roots, wrapped in moss, are plunged. With a bottom-heat of 65° to 75° at the beginning, the watering is liberal, and after three days the heat is increased from 85° to 100°, and maintained at this until the appearance of the shoots above-ground. It is better to cover the beds with sashes, and shade in sunny weather. To have the Lily of the Valley in flower by Christmas, it is necessary to commence about November 23 or 24, and carry out the preceding instructions. The great bottom-heat is especially necessary for very early forcing.

THE EUREKA POST BOX, the invention of Mr. J. Lovel, of Weaverthorpe, near York, is a simple contrivance, specially designed for the transmission of plants, flowers, and fruits through the post office. The boxes are made of cardboard, at a very small cost for material, and as no paste or stitching is required, a handy boy can make them at the rate of twelve per hour. A pattern of the box will be supplied by Mr. Lovel for a mere trifle. As a proof of the value of the invention, it may be mentioned that a portion of a bunch of grapes forwarded through the post in one of these boxes came to hand in excellent condition.

## THE GARDEN GUIDE FOR NOVEMBER.

HAPPY the man, whose wish and care  
A few paternal acres bound,  
Content to breathe his native air  
In his own ground.

Whose herds with milk, whose fields with bread,  
Whose flocks supply him with attire;  
Whose trees in summer yield him shade,  
In winter, fire.

Blest who can unconcern'dly find  
Hours, days, and years slide soft away,  
In health of body, peace of mind,  
Quiet by day,

Sound sleep by night: study and ease,  
Together mixed; sweet recreation,  
And innocence, which most does please,  
With meditation.

Thus let me live, unseen, unknown;  
Thus unlamented let me die,  
Steal from the world, and not a stone  
Tell where I lie.

POPE.

## FLOWER GARDEN.

The only plants of importance that bloom during the month are the *Chrysanthemums*, and these mostly require the protection of glass to have them in perfection. If the weather is open, the early-flowering varieties of the pompon section will bloom satisfactorily in the open borders, and have a very attractive appearance during the first fortnight.

As this is a good season of the year for taking up, dividing, and replanting Lilies of all kinds, the work should have attention at once. They are now beginning to make fresh roots, and will not feel the shift so much as when disturbed in the spring. The soil should be trenched up, and a liberal dressing of manure applied. Push on the planting of evergreen and deciduous trees and shrubs as fast as possible, so as to get them in their places before the rains cool the earth too soon. Take up the Dahlia tubers, cut the stem down to within six or nine inches of the ground, and after lifting them carefully, place them in a cool dry place, where they will be secure from frost. All tender or half-hardy plants must now be removed under cover, but admit a free circulation of air about them in favourable weather. Take up and divide herbaceous plants, keep them out of the ground as short a space of time as possible, and take advantage of the opportunity for digging the ground up deeply, and applying a dressing of manure, or fresh soil, or a mixture of both. Sweep and roll the lawns and paths occasionally, to give them a fresh and bright appearance, and carefully preserve the fallen leaves for rotting down to leaf-mould.

## KITCHEN GARDEN.

To insure a good supply of salading, lift full-grown Lettuce and Endive, with a good ball of soil, and place them rather close together in a cold frame or orchard-house, where they will be secure from frost. Dampness is the greatest enemy these subjects have to contend with at this season, and provided they can be kept dry by any means, a few degrees of frost will do them no harm. Look sharp after Cauliflower and Lettuce plants in frames, and remove every trace of mildew and decay directly it makes its appearance. Give full admission to the air, but keep the foliage dry, and protect from frost. Either ridge up or trench all remaining vacant quarters, as a thorough exposure to the atmosphere is nearly of as much importance to the ground as a dressing of manure.

## FRUIT GARDEN.

Fruit-trees growing too luxuriantly must be root-pruned, and this is the best season of the whole year for performing that operation. Trees that have been undisturbed for many years past must be cautiously dealt with, and have only half the roots pruned now, reserving the other for next season. More recently planted trees may have the whole of the roots cut in at once. Open out a trench at a distance

November.

of two or three feet from the stem, according to the age of the tree, and after going deep enough to reach all the horizontal roots, work the spade underneath the ball to sever the tap-roots, which materially assist the production of gross badly-matured wood.

#### GREENHOUSE AND CONSERVATORY.

To guard against a damp stagnant atmosphere in these structures, water the plants carefully, and without throwing much water upon the floor. When the atmosphere appears damp and stagnant, light a fire in the morning of a fine day, and open the ventilators at the same time, to enable the impure air to escape, and admit a fresh supply to take its place. Remove all decayed leaves, and train into shape Azaleas and other plants that need that attention. Keep *Ericas*, *Epacris*, and other plants of a like nature, at the coolest end of the house, and such things as Chinese *Primulas* and *Cyclamens* at the warmest end. The conservatory should now be gay with *Chrysanthemums*, and to enable the flowers to retain their freshness as long as possible, maintain a dry atmosphere, and remove every leaf immediately it exhibits the least trace of decay. Gold and Silver Zonal and Show and Fancy *Pelargoniums* must be kept in a temperature of about forty or forty-five degrees near the glass, and sheltered from cold currents of air.

#### STOVE.

It is not desirable to excite the plants at this season of the year, therefore reduce the temperature of this structure to an average of sixty degrees, with fire-heat alone, and a rise of five degrees with the aid of sun-heat. Keep the atmosphere much drier than hitherto, and water early in the morning, to enable the dampness therefrom to dry up before evening. Ferns must be carefully handled just now, a thorough rest is nearly as essential to their well-being as it is to flowering plants; but whilst guarding against giving them too much water, carefully avoid their suffering from drought. Orchids with fleshy pseudo-bulbs, like the *Cattleyas*, require just sufficient to keep them fresh and plump, but the *Vandas*, and others of like habit, will require rather more. Encourage winter-flowering plants by placing them in the warmest corner of the house.

### HORTICULTURAL AFFAIRS.



**ROYAL HORTICULTURAL SOCIETY.**—Notwithstanding the difficulties with which this Society is surrounded, the meeting of the Fruit and Floral Committees on October 4th, was for the season remarkably successful. There was a very excellent display of fruit, cut flowers, and flowering plants, and the Council Room has not for many years past presented a more attractive appearance at the October meeting, than on the occasion here referred to. Chief amongst the plants staged was the collection of orchids exhibited by Messrs. J. Veitch and Sons, which made a most attractive display, and the Committee were unanimous in recommending the award of a Davis medal. Amongst other kinds represented in the group were *Cattleya Dominiana*, and *C. exoniensis*, two splendid autumn flowering hybrids, *C. Brabantia*, and *C. superba*; *Oncidium crispum*, *O. Forbesi*, *O. macranthemum*, and *O. tigrinum*; *Odontoglossum Roezli*, and *O. Rossi*; *Phalænopsis rosea*, and *Lælia prestans*. Next in importance was the splendid group of tree carnations, bouvardias, and the fine stands of dahlias from Mr. Charles Turner, of Slough, to whom a vote of thanks was passed by the Floral Committee. The most beautiful of the Bouvardias exhibited were *B. Hogarth*, the most valuable of the scarlet forms, for it is dwarf in growth, and produces its flowers freely and continuously throughout the year; *B. Vreelandi*, a dwarf-growing kind with white flowers, which closely resembles the first-mentioned in all but the colour of the flowers; *B. longiflora flammea*, a coloured form of the well-known *B. longiflora*, which is grown so largely for market purposes; and *B. umbellata alba*. Conspicuous amongst the Tree Carnations were Miss Jolliffe, a beautiful variety, dwarf in habit, and producing a profusion of flesh-coloured flowers; Coronation, crimson-scarlet, rich and attractive; Vestal, pure white; Rose Perfection, rose-pink, an exceedingly attractive flower;

and Scarlet Defiance, one of the best of the scarlet-flowering varieties, and most valuable for general cultivation. Mr. George Rawlings, Old Church, Romford, exhibited several stands of excellent dahlias, and a vote of thanks was accorded to him. Messrs. H. Lane and Son, Great Berkhamstead, exhibited a very fine collection of grapes, and the Fruit Committee recommended the award of the Davis Medal.

**M. DUTITRE'S COLLECTION OF ROSES.**—A recent issue of the *Journal de la Société Central d'Horticulture de France* contains a report by Messrs. Margottin and Pigeaux, on the collection of Roses belonging to M. Dutitre, at Montfort, l'Amaury, some of the particulars of which may interest cultivators of these flowers. The collection, commenced twenty years ago, contains many very fine specimens of good old varieties now rarely seen, except in the gardens of amateurs. Upwards of seven hundred varieties are cultivated, occupying more than an acre of land; some are grafted, or budded, on stems of various heights, whilst others are on their own roots; and these are intermixed and so arranged that the general effect is picturesque and pleasing. Messrs. Margottin and Pigeaux enumerate a selection of the best varieties of each class, and give the totals as follows: Tea-scented, 108; Noisette, 17; Bengal, 16; Bourbon, 54; Hybrid Perpetuals, 471; Perpetuals, 5; Pimpernelles, 2; Perpetual Moss, 6; other Moss, 2; Hundred-leaved, 4; Provence, 2; Damask, 4; Briars, 2; and seedlings of some merit, 18; making a total of 711.

**CARTER'S CUCUMBER "MODEL,"** as shown at the International Exhibition of Potatoes, at the Alexandra Palace, by Messrs. J. Carter and Co., is one of the most elegant and delicate flavoured varieties it has been our good fortune to see in the autumn months. It is of moderate size, rather slender for its length, beautifully proportioned, longitudinally ribbed, and of a lovely deep green colour, with the glossy surface of the Sion House breed.

**MR. ALEX. MCKENZIE**, landscape gardener and garden architect, of 1 and 2, Great Winchester Street Buildings, London, E.C., has had the honour to receive a magnificent diamond pin from His Majesty the King of the Belgians, as a *souvenir* of his recent visit to Brussels, accompanied by a letter from his resident minister, M. Jules Devaux, thanking him for the advice he had given with reference to His Majesty's winter garden at Laeken.

**MESSRS. W. CUTBUSH AND SON**, OF HIGHGATE, have taken the Barnet Nurseries, so long carried on by the late Mr. William Cutbush, and the business will now be in connection with that of the Highgate establishment.

**THE RELATIONS BETWEEN INSECTS AND PLANTS IN ISLANDS** was illustrated by Mr. Wallace in his address to the zoology and botany section of the British Association by reference to the relative prevalence of flowering plants and ferns. In many instances humming-birds take the place of insects in plant-fertilization. The abundance of ferns in certain islands appears to be coincident with extreme entomological poverty, preventing the large development of flowering plants from seeds arriving accidentally. In other islands, only such flowers flourish as are independent of insect fertilization, and these have generally small, green, and inconspicuous flowers. It is in accord with this observation that comparatively few insects feed on ferns, and in respect of enemies generally ferns lead a charmed life, and might subsist on a planet where there were no other orders of plants to keep them company.

**POISONOUS MUSHROOMS.**—Professor Schiff, of Florence, has demonstrated that the non-edible mushrooms have a common poison, muscarina, and that its effects are counteracted either by atropine or daturine. The *Sanitary Record* reports that Italian apothecaries now keep these alkaloids in the rural districts where the consumption of the non-edible fungi is apt to occur. The hint is worth taking in England, where deaths from eating unwholesome fungi are by no means unfrequent.

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## TRADE CATALOGUES.

BALTET FRERES, A TROYES, AUBE, FRANCE.—*General Priced Catalogues.*

FR. BURVENICH, A GENTBRUGGE-LEZ-GAND, BELGIUM.—*Catalogue of Fruit Trees, Ornamental Trees, Shrubs, etc.*

NOVEMBER.

DANIELS BROTHERS, NORWICH.—*Illustrated Catalogue of Dutch Flower Roots.*

J. B. A. DELEUIL, AU HAUT DE LA RUE PARADIS, TRAVERSE DU FADA, MARSEILLES, FRANCE.—*List of New Plants and Seeds.*

S. DIXON & Co., 34, MOORGATE STREET, LONDON, E.C., AND AMHURST NURSERIES, HACKNEY, E.—*Catalogue of Dutch and other Flower Roots.*

EDMONDSON, BROTHERS, 10, DAME STREET, DUBLIN.—*Autumn Catalogue of Hyacinths, Tulips, and other Flowering Bulbs.*

EWING & Co., EATON, NEAR NORWICH.—*Rose Catalogue.*

FRÖBEL & Co., NEUMUNSTER, ZÜRICH.—*General Catalogue of Plants, Seeds, etc.*

MARTIN GRASHOFF, QUEDLINGBURG, GERMANY.—*Special Catalogue of Seeds, etc.*

HOOPES, BROS., & THOMAS, CHERRY HILL NURSERIES, WEST CHESTER, PA., U.S.A.—*Trade List of American Plants, Seeds, etc.*

ALFRED LEGERTON, 5, ALDGATE, LONDON, E.—*Wholesale Catalogue of Dutch and other Flowering Bulbs.*

T. MEEHAN, GERMANTOWN NURSERIES, PHILADELPHIA, U.S.A.—*Wholesale Price List.*

MESSRS. PAUL & SON, THE "OLD" NURSERIES, CHESHUNT, HERTS.—*Catalogue of Roses.*

W. PAUL & SON, WALTHAM CROSS, HERTS.—*Catalogue of Roses.*

ARSENE SANNIER, RUE MORRIS, No. 1, ROUEN, SEINE, FRANCE.—*Priced Catalogue of New Fruits.*

JOSEPH SCHWARTZ, RUE DE REPOS, 43, A LA GUILLOTIERE, LYONS, FRANCE, *Catalogue of Roses, etc.*

JOHN SCOTT, MERRIOTT NURSERIES, CREWKERNE, SOMERSET.—*Catalogue of Flower Roots, etc.*

P. SEBIRE, USSY, NEAR FALAISE, FRANCE.—*Catalogue of Hardy Shrubs and Trees.*

JEAN N. VERSCHAFFELT, FAUBOURG DE BRUXELLES, No. 134, GHENT, BELGIUM.—*Catalogue of Seeds, Plants, etc.*

THOS. S. WARE, HALE FARM NURSERIES, TOTTENHAM, LONDON.—*A B C Bulb Guide, containing also a Selection of Hardy Perennials adapted for Autumn Planting.*

## NOVEMBER EXHIBITIONS.

2.—LIVERPOOL HORTICULTURAL SOCIETY.—*Exhibition of Chrysanthemums and Fruit.*

8.—JERSEY (ST. HELIER'S) HORTICULTURAL SOCIETY.—*Exhibition of Chrysanthemums, etc.*

13 AND 14.—SOUTH BERMONDSEY CHRYSANTHEMUM SOCIETY.—*Annual Exhibition.*

13 AND 15.—BOROUGH OF LAMBETH CHRYSANTHEMUM SOCIETY.—*Annual Exhibition in the Lecture Hall, Borough Road.*

14 AND 15.—NORTHAMPTON CHRYSANTHEMUM SOCIETY.—*Annual Exhibition.*

15.—BRISTOL HORTICULTURAL SOCIETY.—*Exhibition of Chrysanthemums, Fruit, etc.*

16 TO 18.—WOOLWICH AND WEST KENT CHRYSANTHEMUM SOCIETY.—*Annual Exhibition at Woolwich.*

17.—ROYAL WORDSLEY ROOT SHOW.—*Messrs. E. Webb and Sons' Annual Exhibition of Cereals, Specimen Roots, etc.*

17 AND 18.—BRIXTON HILL HORTICULTURAL SOCIETY.—*Exhibition of Chrysanthemums, Miscellaneous Plants, Fruits, and Vegetables.*

21.—LOUGHBOROUGH HORTICULTURAL SOCIETY.—*Exhibition of Chrysanthemums and Fruit.*

25.—SUTTON'S ROOT SHOW.—*Messrs. Sutton and Sons' Annual Exhibition of Roots, etc., at Reading.*

23 AND 29.—ROYAL MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY.—*Exhibition of Chrysanthemums and Fruit in the Manchester Town Hall.*

## TO CORRESPONDENTS.

**TACSONIA.**—*Surbiton*.—Tacsonias will lose their buds if allowed to suffer from dryness at the roots; also when the soil is kept in a constant state of saturation, through the drainage of the pots or borders being in a bad state. Some of the Tacsonias are not sufficiently hardy in constitution to be cultivated successfully in the greenhouse; and the tender kinds, although they will grow freely and produce an abundance of buds, fail to flower satisfactorily. Usually Tacsonia van Volxemia blooms most abundantly in an ordinary greenhouse without receiving especial attention. The principal points in the cultivation of Tacsonias are, to plant in a border well drained, and consisting chiefly of friable loam, and to supply liberally with water during the growing season, without at any time overdoing it.

**POTTING-OFF ROSE CUTTINGS.**—*I. H. W., Brighton*.—The cuttings, if nicely rooted, should, early in November, be lifted carefully and put singly in small pots. Small and large sixties are the two most useful sizes for the cuttings, and a mixture consisting of loam, leaf-mould, and sand, should be employed. Use as much care as possible to avoid injuring the roots, and press the soil rather firm. After the potting is completed, place a layer of cocoanut-fibre refuse, or sifted coal ashes, in the frame, and plunge the pots to the rim in the bed thus formed. The cold frame is the best structure in which to winter the stock. If they are not well rooted, leave them in the frame until March next, and then pot them off separately. In any case cover the glass with dry litter, or some other protecting material, during periods of severe frost, to prevent the frost loosening the soil. Leave the carnations in the boxes until the end of February or the beginning of March, and then pot them off separately, or plant in the open beds as may appear the most desirable to you.

**POT VINES FOR EARLY FORCING.**—*Amateur*.—As you have not had much experience in the forcing of grapes, we cannot recommend you to start the vines before the first week in January. In the meanwhile, keep them safe from frost, and rather cool, and maintain the soil in a moderately moist condition. They must be pruned also without delay, to afford time for the wounds to become healed over before the active circulation of the sap commences. In preparing the vines, wash the rods with clear water or a solution of Gishurst Compound, prepared by mixing four ounces of the compound with a gallon of hot water. The mixture can be applied cold, or of a moderate degree of warmth—say not exceeding 80 degrees. Loosen the soil on the surface, then take away as much of the old soil as can be removed without disturbing the roots, and replace with a mixture consisting of equal parts turfy loam and horse droppings, or old hotbed manure. If it is practicable to make up a bed of leaves or other fermenting materials in the house, do so, and partly plunge the pots in it, to induce the roots to run freely; and to ensure the buds breaking regularly and of an equal degree of strength down to within two feet or so of the surface of the soil, train the canes horizontally, and allow them to remain in this direction until the shoots are about two inches in length. They must then be trained up the roof, and to prevent injury to the tender shoots, exercise a little more than the usual degree of care in doing this. It is not needful to bring that portion of the cane within two feet of the surface down, because it is not necessary to encourage the buds so low down to push. Start with a temperature of 55 degrees, and a moist atmosphere, and increase the temperature according to the progress made. As a rule, it is desirable to increase the temperature by five degrees every second week until the day temperature is 70 degrees with fire-heat alone, and the night temperature 65 degrees.

**CAMELLIAS.**—*Lady Subscriber*.—The plants must receive at this season of the year, moderate supplies of water, and when it is considered necessary to water them, give sufficient to thoroughly moisten the soil. The forcing of camellias should not be attempted by amateurs, for unless they are most skilfully handled, the greater proportion of the buds will drop prematurely. If you determine upon forcing a portion of your plants, place them first of all in a temperature of 50°, and in three weeks increase the temperature to 55°, and at the end of a second period of equal length increase the heat to 60°. A few degrees more or less, are of no great importance, but 65° ought not to be exceeded until the end of February when, as is well known, Camellias bloom freely in the greenhouse.

**SEAKALE.**—*R. B. M.*—You can obtain early supplies of this delicious vegetable by simply lifting the roots and taking them to a cellar or greenhouse, but of course

November.



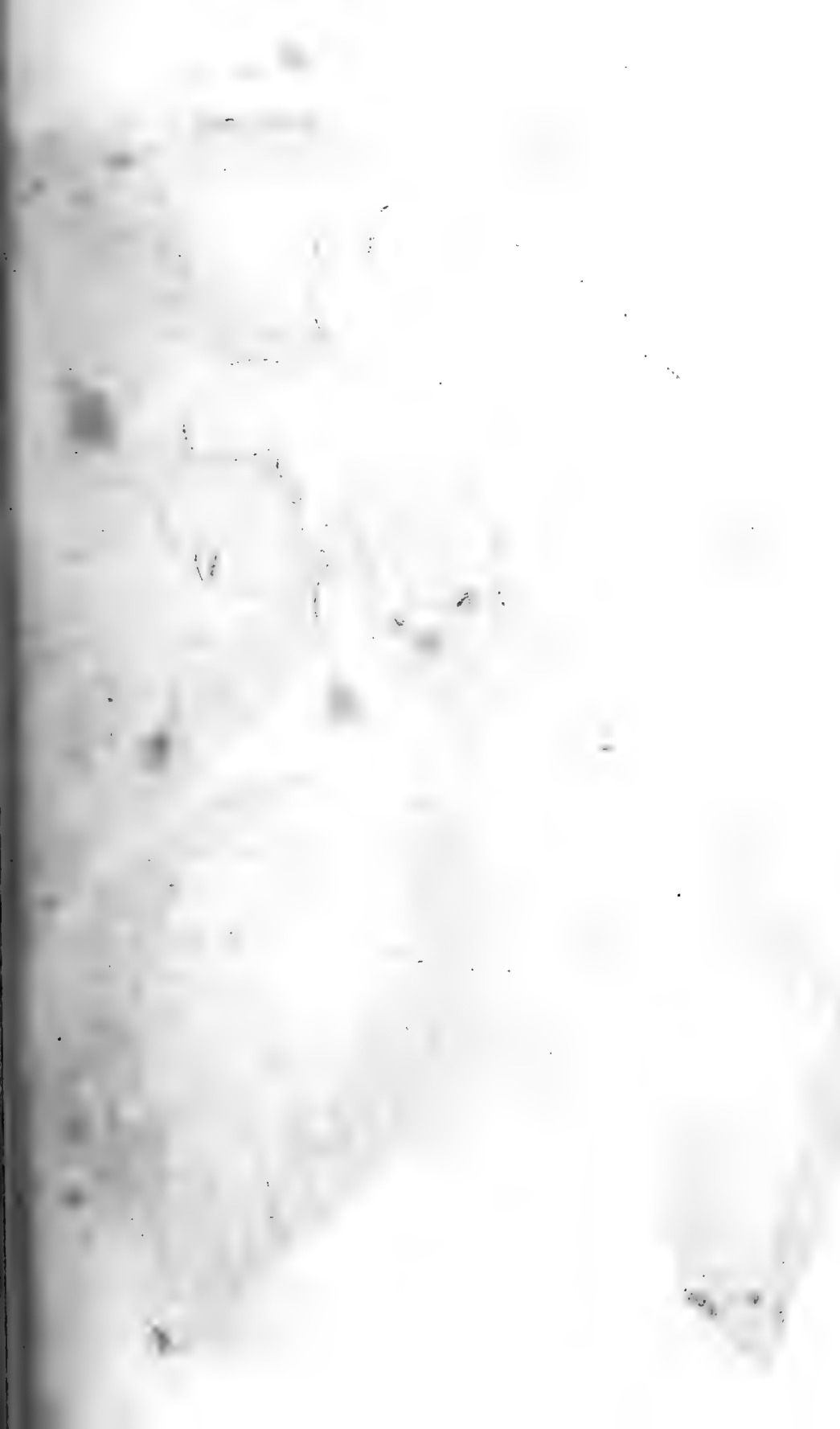
you cannot have it upon your table so soon as it may be obtained with the aid of fermenting materials or fire-heat. Lift a portion of the crowns at once, and after the whip-like roots have been removed, place them rather close together in the darkest corner of the cellar, with a little slightly moist soil between them. They should be buried to within half an inch or so of the crown. Crowns to be placed in the greenhouse should be packed together with a small quantity of soil between them, in a rather deep box, and this must be put in the warmest part of the house, and be covered with hay or some textile fabric, to effectually exclude the light. Unless seakale is blanched properly, it will be very indifferent when upon the table.

**EARLY PEAS AND BEANS.**—*Young Gardener.*—Peas and beans for early crops may be sown in the course of the month, but there is considerable risk in sowing out of doors now. If you make up your mind to sow, choose a dry sheltered position. If there is plenty of spare room in frames or pits, preparations may be made for early crops without incurring the risk of sowing out of doors. Fill a frame with turfs cut at the usual width, and laid grass-side downwards. Sow the seed pretty close together along the centre of each breadth of turf, and then sift over some fine soil just to cover them, and shut up. As soon as the seeds have started, give air cautiously, and keep them as hardy as possible. As they rise, occasionally add more soil, so as to keep earthing them up; this will make them more strong and stubby than by covering them their proper depth in the first instance. In February the turfs may be lifted out, and the plants divided without any injury to the roots, and so planted out in drills of well-prepared soil, and protected with long dry litter and reed wattles until the weather allows of complete exposure.

**MANAGEMENT OF THE PLANT STOVE IN WINTER.**—*Regular Subscriber.*—The occupants of the plant stove still growing freely must have fair supplies of water—not so many times a day, or so many times a week, but as they want it. Plants that have filled their pots with roots, and now making new growth or pushing for bloom, will need more than those that have plenty of pot room, and are not thoroughly established. Plants in the warmest end of the stove will enjoy a moderate amount of vapour produced by sprinkling the floor and pipes. Plants at rest to be kept as dry and cool as possible consistent with safety, and moderately well aired. *Achimenes* and *Gloxinias* at rest should be packed altogether in a dry place. We suppose you are able now to furnish the conservatory with showy specimens of *Euphorbia jacquiniiflora*, *Poinsettia pulcherrima*, *Gesnera zebrina*, *Begonias*, *Luculias*, *Camellias*, etc., from the stove. But there must be a succession, and one of the first things to consider now is how to make the stove available, not only for the preservation of its ordinary inmates, but to forward furnishing plants for other structures. *Plumbago capensis*, *Cytisuses*, *Azaleas*, *Rhododendrons*, lilacs, and hardy shrubs generally, should therefore be introduced at the coolest end of the stove, if there is room for them; a few roses may be forced with them, and many ornamental-foliaged subjects will be found useful if in a clean and healthy state. Mixed stove selections must now be kept rather cool, as growth is not desirable. Keep the atmosphere of the house sweet by giving air on fine days, and be careful to remove dead leaves, mosses, and whatever impedes the circulation of air or engenders unwholesome vapours. All plants approaching a state of repose to have little or no water. Plants in active growth must be watered with caution; let them have enough, but see that they do not stand in pans with stagnant water about their roots, or in wet places in the midst of mildew. Temperature of the plant stove should during the winter season be 50° by night, 60° by day, with a rise of 10° during sunshine.

**CHRYSANTHEMUMS.**—*F. S. M.*—The chrysanthemums which are mentioned, and have been under cover for a fortnight or so, should be at once arranged in the conservatory, and from the time the flowers begin to expand a dry atmosphere should be maintained, but no more artificial heat must be supplied than is necessary for the purpose. A dry atmosphere and a temperature ranging from 40° to 45° are essential in the preservation of the freshness of the flowers, for as long a period as possible. Plants of the pompon varieties may be lifted from the borders and be turned to good account in the decoration of the conservatory, provided they are taken up with good balls of soil, and kept rather close for a fortnight or so after they are lifted. A portion of the leaves will turn yellow and fall off, but this is a matter of no very great consequence, for with a little ingenuity, the plants can be readily arranged so that the lower part is not visible.







## THE AUCUBA JAPONICA.

*(With Coloured Plate of Aucuba Japonica aurea maculata.)*

HE "spotted laurel," or *Aucuba Japonica*, has become one of the most interesting as well as the most useful of the many handsome hardy shrubs that adorn our gardens. In the numerous forms of this fine old plant, we have a great diversity in the colouring of the leafage, and by taking the simple precaution of planting a few examples of the male varieties in the shrubbery borders, the bushes of the female forms may be had during the winter season densely covered with large berries of the most brilliant-scarlet hue.

The history of *Aucuba Japonica* is remarkably interesting. It was discovered by Engelbert Kämpfer, a Westphalian naturalist, in 1690, or thereabout, but it was not introduced to Europe until 1783. To Thunberg, a noted Swede, belongs the honour of introducing the plant to Europe; but the rate at which it found its way into great gardens was very slow indeed, as compared with the rapidity with which a meritorious introduction is now distributed. Being known as a Japanese plant, the *Aucuba* was considered too tender to be exposed to the rigours of an English winter, and, in consequence, it was for many years considered a "hothouse" plant, and treated accordingly. But in the course of time it was observed that wherever it was grown in a cool temperature, it improved, and its ultimate acclimatization occurred as the result of such observations.

The exact date of the planting of the *Aucuba* as a hardy tree is not known. In Aiton's "*Hortus Kewensis*," published in 1813, it is described as a hardy tree, as introduced to Kew, 1783, by Mr. John Græffer. In the twenty-first edition of Abercrombie's "*Every Man his own Gardener*," published in 1818, there is no mention of it to be found, though there are abundant directions for propagating and planting evergreens of all kinds. Though known to botanists as a far more interesting shrub than to ordinary eyes it appeared to be, it was, by the gardener, regarded simply as a useful member of the mixed shrubbery, and particularly valuable to plant near towns, on account of its patient endurance of smoke and dust. Although the Dioecious character of the *Aucuba* and its natural fruitfulness of berries were facts recorded, the importance of securing the male plant was felt by few even amongst advanced botanists and horticulturists. Siebold brought with him from Japan a collection of varieties differing in the size, shape, and markings of their leaves, but they all proved to be females. It was reserved to Robert Fortune, one of the most successful of modern plant collectors, to obtain the male plant and bring it to England in safety. The plant secured by Mr. Fortune was the only one he had been able to discover; and when at last it was placed in the hands of the late John Standish, then of Bagshot, the purchaser of Fortune's introductions, it was in such poor condition through the vicissitudes of the voyage,

that great skill and patience were needed for its recovery. The care bestowed upon the plant met with an ample reward, for it not only grew, but soon flowered, and every particle of pollen was applied to its destined purpose, and thus the first *Aucuba* berries were produced in England.

It was on March 5, 1864, that the late Mr. Standish exhibited for the first time a female *Aucuba* loaded with glistening coral-coloured fruit, and in a very brief period the demand for male *Aucubas* was immense. The young plants were sold at the rate of about a guinea for every leaf upon them, and the pollen was considered far more precious than gold dust. There was no difficulty in selling every plant that could be produced; the only difficulty was to multiply them fast enough to meet the demand, though every bud that could be cut was converted into a plant by grafting, and hastened into growth by stove temperature. To Mr. William Bull, of Chelsea, must, however, be awarded the credit of publicly demonstrating the capabilities of the *Aucuba* by his exhibition of about fifteen varieties at the horticultural exhibition held in the Guildhall of the City of London on November 14, 1866. Since the last-mentioned date it has been a quite common occurrence for berried *Aucubas* to make their appearance at the horticultural exhibitions held during the winter.

The commonest of all known garden trees was thus re-introduced to public notice as an altogether new, interesting, and remarkable subject, and thousands who never before reflected upon the laws which govern reproduction in the vegetable kingdom, resulting in so beautiful a replication of the phenomena of the increase of animal life, were led to inquire into the first principles of vegetable physiology, and thereby to discover that in the commonplace we have for all intellectual and perhaps moral inquiry an emblem of the inexhaustable. Since Mr. Bull's famous exhibition of *Aucubas* covered with scarlet berries, the fact of the separateness of the sexes in this plant, and the certain development of its complete character in our gardens, has become part of the stock of everyday knowledge; but nevertheless it will be long before the air of novelty is worn away from the subject.

It is not necessary to say much in reference to the cultivation of the *Aucuba*, for it is well known that it will thrive in almost any soil and situation, and that it is one of the very best evergreens in existence for town gardens. Especially desirable for smoky districts are the green-leaved kinds, for the leafage of these does not so readily become discoloured by the smoke and dust of towns as that of the variegated varieties, and the leaves are so smooth and glossy on the surface, that a moderate shower is quite sufficient to thoroughly cleanse them again.

For planting in beds and borders bushes are the most desirable, but when they are grown in pots for the conservatory neat standards are valuable for their distinct and effective appearance. They are exceedingly beautiful when loaded with berries, and their formation is a pretty bit of practice for the amateur who takes an interest in his garden.

*Aucubas* may be multiplied by means of layers, cuttings, grafting,

and seeds. The latter is the most simple way of raising a stock, but when it is desired to increase any particular kind, one of the other methods mentioned must be resorted to; to raise a stock by layering, select early in May strong clean shoots, tongue them at a convenient point, and peg them down in the soil surrounding the bush, and in doing this bury about four inches of the stem two or three inches below the surface, and as far as practicable the tongue should be in the middle of the portion of the stem buried. In some cases the layers may be removed in the following October; but as a rule they should not be detached until twelve or eighteen months after laying the shoots down, for they will then have become so well furnished with roots that they will not feel the removal. Cuttings of rather small portions of firm short-jointed wood strike freely if taken in August and inserted in sandy soil. In the case of choice varieties the cuttings may be dibbled thickly in pans or boxes, and be placed in a cold frame, where they can remain until the following spring, but cuttings of the commoner sorts should be inserted in a partially shaded border out-of-doors, and be allowed to remain in the cutting-bed for twelve months, to afford them time to become well rooted. In raising seedlings, sow in pans or boxes in April or May, when the berries are removed from the plants, and place in a cold frame, or in a shady position out-of-doors, as may be the most convenient.

Until the seedlings are large enough to be removed to the nursery bed, or be potted off separately, the seed-pans will require no attention beyond maintaining the soil in a moderately moist state, and in keeping the surface free from weeds. Sometimes a portion of the seedlings will not make their appearance until twelve or eighteen months after the seed has been sown, and therefore there must be no haste in emptying the seed-pans and boxes. Young plants raised from cuttings, layers, or seedlings should remain in nursery beds two or three years after they have been propagated, to give them time to become nice bushes before being planted in the shrubbery borders.

Standards for conservatory decoration are readily formed by taking up straight stems to a height of about two feet, and then cutting the tops off to induce them to break out and form neat heads. The choice kinds can be quickly converted into standards by grafting them upon clean stems of the desired height of the common form. The straight shoots which push from the base of vigorous specimens are readily detached from the parent, and make excellent stems. In arranging *Aucubas* in the borders, a few examples of the male varieties should be planted at intervals, and if this is done, insect agency will accomplish all that need be done in the fertilization of the flowers, and a plentiful crop of berries will be secured. It may be added that well-berried examples, lifted from the open ground in October, and put in pots, may be turned to good account in the embellishment of the conservatory, the sitting-room, and front hall, from the time the berries take on their brilliant colouring until the spring is far advanced.

There are about twenty-five varieties in cultivation, but such a

large number is not required, except it be in large gardens. Six or eight will be quite sufficient for the amateur, and of these five should be female, and three male varieties. Of the females, the best are :—

*Aucuba Japonica fœmina aureo-maculata*.—A very handsome variety, with large golden blotch in the centre of the leaves. This originated with Messrs. W. Cutbush and Son, of the Highgate and Barnet nurseries.

*A. Japonica fœmina lati-maculata*.—A distinct variety, the leaves large, with broad central band of yellow, and rich yellow spots.

*A. Japonica fœmina Youngi*.—A grand variety, the leaves large, and of a deep glossy green; the berries of immense size, and freely produced in huge clusters.

*A. Japonica fœmina viridis*.—A neat variety, of compact growth, remarkable for its extreme fruitfulness; the leaves are of medium size, and of a fine, deep green hue, whilst the berries, which are borne in extravagant profusion, are of full size. It is the best of the whole series for indoor decorations.

The two best of the male varieties are :—

*Aucuba Japonica mascula viridis*.—A fine green-leaved variety, corresponding in all its characters (except sex) to the last-mentioned in the list of females.

*A. Japonica mascula bicolor*.—A handsome and distinct variety, the leaves mostly half green and half yellow.

In addition to these, there are the common female form, with spotted leaves, known in the catalogues as *Aucuba Japonica fœmina maculata*, and its male counterpart *A. Japonica mascula maculata*, both of which are most desirable for the shrubby border.

S. H.

## LATE GRAPES FOR SMALL GARDENS.

BY WILLIAM COLE,

The Grove Vineyard, Feltham, Middlesex.



LATE Grapes are of such immense value during the festivities of Christmas and the new year, that it is most satisfactory to those who, like myself, take a special interest in the grape vine, to know that their cultivation is extending in the gardens of the middle classes, as well as in those of the nobleman and merchant prince. There are yet many gardens into which late-keeping grapes may be introduced with advantage, and I would like to direct the attention of those who have vineries occupied exclusively with sorts available for the table during the summer and early autumn months, to the extreme value of the sorts that may be had in splendid condition throughout the latter part of the autumn and the whole of the winter.

It is well known to the owners of gardens of sufficient size to accommodate a fair quantity of fruit bushes and trees, and a good-sized strawberry bed, that from the end of June until the end of September, there is such an abundance of out-door fruits, that grapes are hardly wanted. There are, for example, strawberries, cherries, apricots, gooseberries, currants, plums, nectarines, peaches, and early pears and apples, and some of these, by planting varieties suitable for yielding a successional supply, may be had upon the table for quite three months. The markets afford a fair indication of the value of grapes throughout August and September, the two months in which so many cultivators make every effort to bring their crops to maturity, for really excellent samples of Black Hamburgh and other ordinary kinds may be purchased at prices ranging from one to two shillings per pound. But no sooner are we at the end of September than the last of the plums, peaches, and nectarines are disposed of, and grapes increase in value at a very rapid rate. From the middle of October onwards, the only fruits available for dessert, excepting those of foreign importation, are pears, apples, and grapes, and in consequence it is no uncommon occurrence for really good samples of the latter to be worth in the market from seven to ten shillings per pound at Christmas. From these foregoing remarks it will be gathered that by growing late sorts, grapes may be had upon the table not only when they will be most appreciated, but when they command such a high price, that to purchase them for ordinary consumption is entirely out of the question.

In referring to the production of grapes for winter consumption, it is necessary to state distinctly that the assistance of artificial heat is essential at certain stages. It was at one time supposed that vines for yielding late supplies should be kept in a dormant state as long as possible in the spring, and that they should be brought along slowly during the summer, but since more attention has been paid to the matter it has been found that the vines must be allowed to start early, and also have the assistance of fire-heat during the periods of cold weather which invariably occur during the summer season.

The crop must be thoroughly ripened by the middle of September, for unless the grapes are perfectly matured they will not keep for any length of time, and owing to the great decline in solar warmth after the period last mentioned, it is not practicable to well finish samples that are then in an immature condition.

It would occupy too much space to enter into particulars bearing on the management of the vines, and on this occasion it will suffice to say that the temperature ought not to fall much below  $70^{\circ}$ , from the time the new shoots are two or three inches in length until the ripening of the crop is completed, and that there will be but few nights in which a moderate degree of fire-heat will not be found necessary. With sun-heat and free ventilation, a temperature of  $80^{\circ}$ , or even  $85^{\circ}$ , will not be too much for the vines.

One of the most handsome of the grapes for sending to table from October to Christmas, is *Gros Colman*, which has frequently been described as of indifferent quality. It is, however, most excellent

when grown in a temperature sufficiently high to ensure its being well ripened. For use from October until the April following, *Alicante* and *Lady Downes* are both excellent black varieties, being taking in appearance and of good quality. They both do exceedingly well in the same house as Gros Colman, but they may be ripened in a rather lower temperature, and, speaking in a general way, are the most useful in a small garden. Until quite recently, a really first-class white grape for late keeping has been much wanted, for the *Muscat of Alexandria* requires a very high temperature and the exercise of considerable skill to finish it, and the *White Lady Downes*, sent out seven or eight years since, is so indifferent in quality that it is not held in high estimation by cultivators. We have now, however, two splendid white grapes that may be had in capital condition throughout the winter. The first is *Golden Queen*, a fine variety with large handsome bunches, and berries rather above the medium size; the latter are oval, and of a clear amber, those near the top part of the bunch being tinged with red. The flesh is firm and crackling, and of the most delicious flavour. *Mrs. Pearson* is somewhat similar to the preceding, but the berries are rounder, and the flavour, which is of the most delicious character, is slightly different. Both sorts possess a strong, vigorous constitution, and set freely. They require much the same temperature as Gros Colman, and are the most valuable grapes introduced to cultivation for many years past.

## BRIGHT FLOWER-BEDS IN WINTER.

BY J. CALVERT CLARKE.



THOSE who do not fill their flower-beds during winter with spring-flowering plants will find small hardy shrubs most valuable for hiding the bare soil, and giving a cheerful aspect to the place. This plan of furnishing the beds for winter entails but little labour and no very great expense after the first outlay is made. Provided proper care is exercised in removing the plants, and suitable quarters afforded them during the summer, with care they will last in good condition for many years; at the most, a few shillings annually will suffice to make good the losses. I am quite sure those who have not seen a flower garden furnished as here advised, can have no idea how cheerful neat shrubs are capable of making a place look during the dull months of winter.

Shrubs only may be used when desired, but the best effect is produced by freely edging the beds with early-flowering bulbs, such as the *Winter Aconite*, *Snowdrops*, *Hepaticas*, *Crocuses*, and early-flowering *Tulips*. Beds of rather small size should have only one kind of shrub in each, as the effect will be more telling than when several different kinds are employed. In large beds or borders it



is best to plant each variety of shrub in clumps of ten or twelve, or more, according to the space to be filled. It appears to me that I shall be better understood in what I have further to say on this subject, if I describe the plan of filling in the beds which I used to practise in the gardens under my charge before we commenced to fill them entirely with spring-flowering plants.

The flower garden at that time consisted of a neat design, made up chiefly of round and oblong beds, each bed holding from two to four dozen small shrubs, leaving a space round each for an edging of bulbs or some dwarf hardy plant. The height of the shrubs never exceeded eighteen inches, many of them less, and they were planted thick enough to hide the soil in the bed. In fact, close enough to touch each other, but not so thick as to have the appearance of being overcrowded. With proper care and judgment they can be made to appear as if they were intended to remain permanently. To describe my own way of filling the beds, I will first say my favourite arrangement was a group of *Cedrus deodara*, encircled with an edging of *Irish Ivy* a foot wide, and just inside the ivy a few clumps of *Yellow Crocuses*. The graceful habit of the cedar and its peculiar greyish colour always rendered it very pleasing and distinct from all others. The *Golden Variegated Holly*, established in pots, makes a rich and cheerful bed; but we can afford to do without this holly if it is desirable to do so, and let the *Golden-striped Euonymus* take its place. A bed of this, with a marginal band of *Purple Crocuses*, is most effective, or the crocuses may be dispensed with. The well-known *Aucuba Japonica* makes another capital winter bed, either by itself or with an edging of crocuses or early tulips; and so does *Retinospora pisifera*, which puts on a beautiful golden hue in the early spring months. The *English Yew*, edged with a broad band of *Euonymus radicans variegata*, makes a distinct bed. The *Portugal Laurel*, with an edging of *Euonymus latifolius variegatus*, is another effective arrangement. *Rhododendron ponticum* is also a suitable subject, and *Mahonia aquifolium*, *Tree Box*, *Pernettya mucronata*, and *Phillyrea buxifolia* are also useful. The three last-mentioned subjects with the *Variegated Periwinkle* neatly pegged round the beds in a band from eight to ten inches wide, varying the arrangement with edgings of *Crocuses*, *Tulips*, etc.

The *Variegated Kale* and *Dell's Crimson Beet* are also adapted for the purpose; the kale is quite hardy, and the beet will stand all through a moderate winter if the position is sheltered and the soil well drained. I have an objection to the use of the variegated kale myself, because, if we have genial weather early in March, it begins to run to seed, and then its beauty is gone, and this is just the time we want it at its best, as the weather gets favourable for out-door exercise. This is the time, too, in which people begin to enjoy and value their gardens, so that, if there has been no previous arrangement to make it cheerful, it is too late then to make it so until the season is more advanced, to enable more tender subjects to be brought into use.

It seems necessary to say in connection with the keeping of these dwarf shrubs in good condition for several years, that they

should be removed again from the beds early in May, be carefully lifted, and be taken at once to their summer quarters. The best place for them during the summer is under the shade of a north wall or fence, but they must not be placed under the drip of trees or the consequences will be serious, as the drip will injure them and the roots of the trees rob the soil of all the moisture. As soon as they are taken from the beds they must be planted again immediately, for if allowed to lay about out of the ground the roots will suffer from exposure; the soil in which they are planted should be rich and light, and if not of a light nature a shovelful of nice fine soil must be placed round the roots of each shrub. The soil must be trodden firmly about the roots, and they should have a good soaking of water. This may appear altogether a tedious business, but when put into practice it is but a trifling affair, and I have proved from experience that every detail here given is necessary to success.

I may also profitably occupy another paragraph in calling attention to the fact that many of the subjects I have recommended may be easily increased at home without any great expenditure of time or space. The *Euonymus*, *Ivy*, *Periwinkle*, and *Aucuba* may be easily propagated by cuttings taken in September, and inserted in fine sandy soil, under the shade of a west wall or fence. If in the winter they can have the shelter of an old light, or hand-glasses, they will be all the better for it. At the end of twelve months they may be transplanted into nursery beds in good soil, and in two years from the time the cuttings are put in many of them will come into use with larger plants.

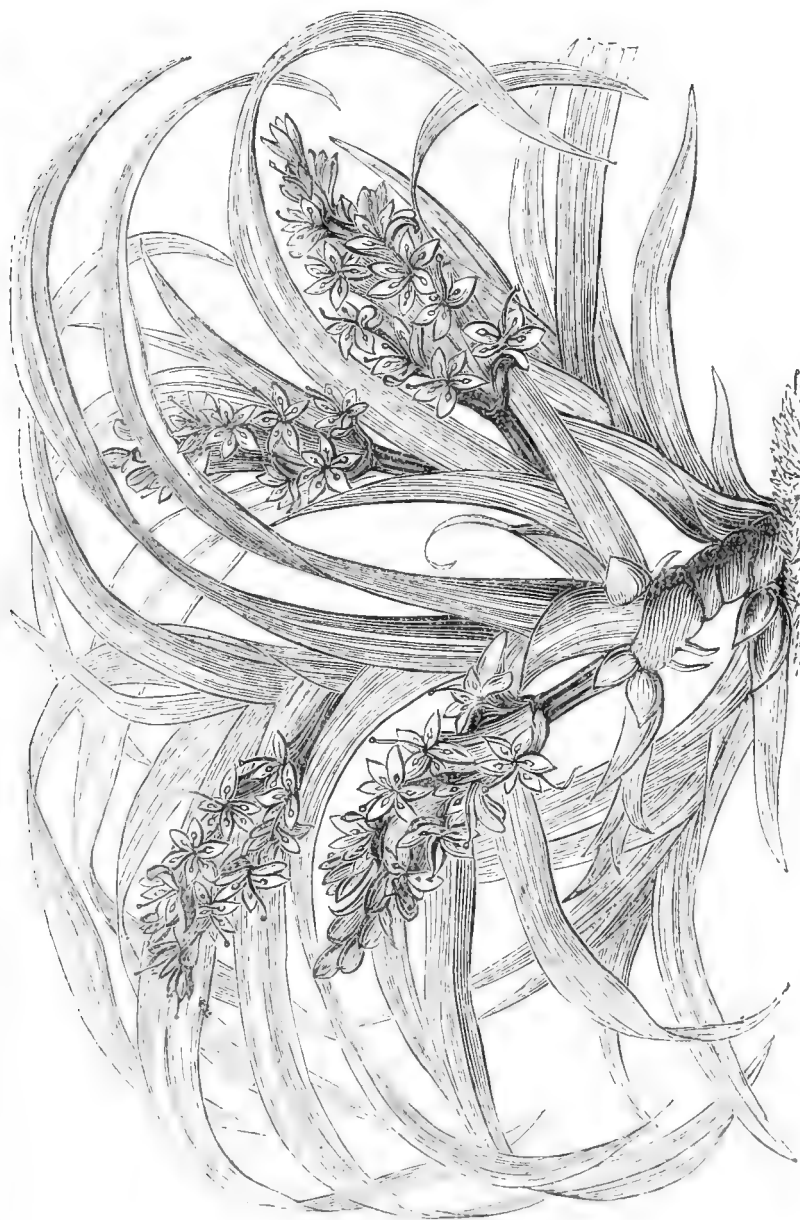
In dry positions some pretty beds may be made with such plants as *Sempervivum Californicum*, *Sedums*, *Saxifrages*, *Variegated Euonymus*, and the beds will be much admired. I saw last winter in the garden of a friend of mine a very pretty bed, formed with a centre star of *Dell's Crimson Beet*, the outer segments filled in with *Golden Thyme*, next a broad band of *Sempervivum Californicum* in large plants, with an edging of *Golden Feather* next the grass. The bed was well raised above the level of the grass, and the position dry and sheltered. Thus we see there is no necessity why a garden should be deficient of beauty even during winter, for there are plenty of materials to make it cheerful if we care to use them.

#### REINECKEA CARNEA FOL. VAR.



**T**HIS distinct and handsome plant is so nearly hardy that it may be grown to perfection in a cool conservatory, and may be put out on rockwork during the summer. As it belongs to the *Dracæna* family, it will be understood that the most simple treatment suffices for it, for a difficult *Dracæna* is a thing unknown. The boldly recurved leaves

are richly coloured with alternate bands of green and yellow, and the flowers are rosy red, with conspicuous yellow anthers. It assorts



HEINECKEA CARNEA FOL. VAR.

well with yuccas, agaves, and other nearly hardy plants that are conspicuous for their fine leafage.

## THE ROYAL HORTICULTURAL SOCIETY'S TRIAL OF PELARGONIUMS.

BY JOHN WALSH.



IN continuation of my notes on the important trial of pelargoniums in the gardens of the Royal Horticultural Society at Chiswick, I now intend making a few remarks on the varieties grown for their flowers, for the purpose of indicating a few of the very best for pot-culture. As stated last month, the Chiswick collection was remarkable for its extent, and included all the leading varieties in the several classes, and a good opportunity was afforded for ascertaining which of the innumerable varieties are best suited for general cultivation. I shall not attempt to enumerate all that are good, for to do so would require much space, and the amateur would, moreover, be perplexed, by having placed before him a much larger number of sorts than it is possible for him to grow. I will, therefore, confine my notes to those only which, because of their splendid quality and distinctness, should have a place in gardens in which there is not a great extent of glass. It is now too late in the day to say much in reference to the value of zonal pelargoniums for conservatory decoration; but it may be well to remind my readers that, by a very simple course of procedure, they may be made to contribute to the attractiveness of the conservatory throughout the summer and until quite late in the autumn, and also that when they are grown for the embellishment of this structure, the common varieties employed for bedding purposes should be put on one side to make way for those of finer quality. According to the Chiswick trial, the very best for pot-culture are—

*A. F. Barron*, brilliant scarlet, with white eye; flowers of splendid quality, and freely produced.

*Excelsior*, rich orange scarlet; the eye pure white, the pips large, of superb form, and borne in good trusses.

*Corsair*, rich scarlet; the pips of splendid quality, the trusses large and well-proportioned; most useful for bedding, as well as for pot specimens. This is perhaps the most thoroughly useful of all the scarlet zonals.

*Mark Twain*, deep crimson; a superb variety; the pips and trusses are alike remarkable for their large size and splendid quality, and the plant is of a compact branching habit, and therefore well suited for specimens.

*Lord Macaulay*, rich crimson, is also exceedingly good, for the flowers are of the size and shape so much appreciated by the florist, and the habit of the plant leaves but little to be desired.

*The Moor*, blackish crimson; is the darkest zonal we have, and is most valuable for contrasting with the light varieties.

*Charles Davis*, crimson, suffused with magenta; is a superb variety, for the colour is peculiarly rich and attractive, the flowers of fine quality, and the habit most excellent.

*Charles Smith*, rich rosy crimson; is also of a most attractive

shade of colour, and as the flowers are large, the trusses noble in their proportions, and the growth branching and short-jointed, it must be noted as the best of its colour.

*Mary Pearson*, rich glowing crimson, suffused with purple; is especially good; and in the autumn, when the purple shade predominates, it is unsurpassed in attractiveness. The trusses are much larger than those of the other varieties with purple-tinted flowers.

*Mrs. Pearson*, deep crimson, shaded magenta, has large trusses of flowers of fine quality, and is in every way first class for ordinary decorations and exhibition specimens.

*Agatha*, purple-crimson, tinted blue, is a superb variety, the colouring wonderfully rich, the flowers large and of good form, and the habit compact and branching. It is especially useful for late autumn flowering.

*Oberon*, plum-coloured, with purplish shade, has much to recommend it, for apart from its distinct colour, the flowers are of splendid quality and the habit excellent.

*Lady Sheffield*, deep lilac-pink, very rich, the flowers exceedingly large, the petals stout, and the trusses finely developed; the growth is free and compact, and altogether it is quite unsurpassed in its shade of colour.

*Ethel*, bright pink, a grand variety, although the individual flowers are not of such fine form as those of the preceding; the trusses, however, are exceptionally large, the habit of the plant is free and branching, and for effectiveness it has but few equals.

*Rose of Allandale*, rose-pink, the pips are of large size, and borne in good trusses; well adapted for pot culture and bedding, and therefore especially valuable.

*Lucy Bosworth*, delicate pink, with white blotch on top petals, is also most desirable for its pleasing shade of colour and superb quality.

*Sybil Holden*, rose-lilac, is distinct in colour and remarkably good in habit, and can be strongly recommended.

*Laura Strahan*, bright salmon, the highest coloured variety of its class, and as the flowers are of fair size and borne in large well-proportioned trusses, it may be recommended as the best of its line of colour.

*Mrs. George Smith*, pale salmon, is also of good quality, and in its way most desirable.

*Vanessa*, rich salmon-shaded orange, is telling in colour and good in quality, and with the two varieties immediately preceding it, a trio of great value is formed.

*Marguerite Ponton* has pure white flowers, with bright salmon centre, and is exceedingly beautiful.

*Snowdon*, although last on the list, is by no means the least in importance, for it quite supersedes all the white zonals. The flowers are pure white, of fine shape, and borne most profusely in large trusses, which stand well above the foliage. It has a dwarf branching habit, and is well suited for bedding and pot culture.

## THE TABUAN OR KING'S PARROT.

BY THE PRISONER'S FRIEND.



HE Tabuan or King's Parrot, *Platycercus scapulatus*, is so little known in this country that probably a few observations on its beauty and habits may interest the readers of the FLORAL WORLD.

It is a bird of smallish size, closely related to the Ring Parrakeets, and in Mr. Vigors' classification is placed between them and the pretty Nymphicus. The body is about the size of a pigeon, the bill is short, the head round, and without a crest; the face is feathered; there is no naked cere round the eyes, the legs are short, the whole contour smooth and elegant. The male bird which I have before me, is superbly coloured, the head, breast, and under parts being of a brilliant crimson scarlet; the back and wings deep green, with boldly defined scapular line of pale green cerulean; the tail black, with brilliant green reflections. The long, broad tail, rounded at the apex, of an exquisitely rich black colour with metallic green scintillations, gives a very distinctive appearance, and it may be questioned if, amongst the many splendid birds to be found among the parrot tribe, there is one that surpasses, as there are certainly but few that equal in richness of colouring, the brilliant King's Parrot. The bird in my possession is a peculiarly fine specimen, as the males are not always so highly coloured, and the females have the head and neck green. I purchased it some ten years ago in Leadenhall Market for six pounds, thinking then, as I still think, the money was well bestowed.

The Tabuan Parrot is a native of Australia. In the article on the Psittacidae, in the "English Cyclopædia," occurs the following notice of it:—"Mr. Caley seldom noticed a full coloured specimen, that is, red. He states that when the Indian corn is ripe, they may be seen in large flocks on the farms, clinging on the stalks, and occasioning much mischief to the corn. He apprehends that the greater part of these flocks are young birds, as it is rare to see a bright red one among them. The natives told him that this species breeds chiefly in a white gum-tree (a species of *Eucalyptus*), making its nest of a little grass, and lining it with feathers. It has," he adds, "as many as twelve young ones, and the eggs are of a dirty white, with black specks. The nest is found by its enlarging the hole at which it creeps in; this process gives the surrounding part a reddish appearance, which, forming a contrast with the whiteness of the other parts, renders it conspicuous."

As a cage-bird, this beauty is much to be desired; but truth compels me to say that it is far from perfect as a constant companion, for it is incessantly in action, is somewhat noisy, and utters sounds that are far from pleasing. But I could never tire of such a joyous, innocent, affectionate creature; indeed, when my pretty fellow is likely to be troublesome, I remove him to another room, and give him the treat of chattering to himself. As a rule, his noises and

antics are immensely entertaining. He utters frequently, and loudly, a harsh, grating note, mingled with a soft, agreeable whistle. Being somewhat of a musician, he has learnt to strike the wires of the cage with the under mandible, and to grate and whistle at the same time, and this is an extremely clever performance. The effect is that of two, or even three birds chattering, whistling, and harping together, so intermixed and seemingly simultaneous are the sounds. At times, it abandons the grating note, and then treats us to a succession of soft notes in the minor, accompanied with the harp, and at regular intervals, forming a cadence by a prolonged note resembling the final of the siskin, but louder and fuller, and more prolonged. In all these performances, which are sometimes elegant, and always amusing, it is entirely self-taught; but there is so much method in its manner, that if I were to take credit for having taught it to make itself pleasingly ridiculous, I should be readily believed, except, of course, by persons acquainted with the habits of the pretty creature.

In common with nine-tenths of all the parrots known, the Tabuan Parrot thrives on canary seed, but will eat millet and hemp for a change; although the less it has of the latter the better. It is commonly reported that parrots of all kinds are partial to fruit, but I have not found them so. But this parrot is a genuine fruit-eater, and greedily devours cherries, currants, raspberries, and, indeed, any kind of fruit, but prefers cherries and currants to any. Some years ago, a Tabuan Parrot of mine escaped from its cage, and for some time dwelt in the garden, flying from tree to tree, and at times circling high in the air and screaming with delight. It happened to be late in the summer, and all our currants had been gathered for jam-making; but near at hand was a neighbour's garden in which the fruit still hung upon the bushes in enormous quantities. The roaming fruit-eater soon discovered the land of plenty, and very soon wrought tremendous havoc. It would begin at dawn to strip the trees, and through the day, at every opportunity, it proceeded with the mischief. In the course of a few days, it had pulled and strewn on the ground bushels of fruit, which, of course, were comparatively worthless. My neighbour invited me to see the havoc, and I was not less astonished than pained; but a greater astonishment followed, for the lady who had lost her fruit called upon me to have the bird shot that there might be an end to such mischief. I could only say that I hoped to capture the bird, that I would more than make good the fruit that had been wasted, the actual value of which, after all, was but a trifle; but that to give orders for the shooting of my happy pet was more than I could do; I could only regret I was powerless to prevent any one else shooting it. In the course of a few days after this, the fugitive was captured, having an hour or two previously had a feast of peas, which it had plucked and scattered in the same way as the currants, so that the ground was covered with them.

In respect of teaching, there is not much hope for the Tabuan Parrot. It may be taught a few distinct notes in whistling, but seems incapable of words, and indeed is not attentive to lessons. But it soon learns to know and love those who are kind to it, and

there is not a more affectionate and happy creature to be found in the race of parrots, while in liveliness it has no equal. Its softer notes are frequently uttered at dusk, and are, I imagine, call-notes, indicating the time when the flocks gather together for the night. But it is full of life all the evening, and in the gaslight has a splendid appearance as it plays the harp and grunts and whistles.

## CHOICE FLOWERS FOR CHRISTMAS.

BY WILLIAM JOHNSON.



THE paper on flowers for November, contributed to the last issue of the *FLORAL WORLD* by Mr. Oubridge, whose skill as a cultivator is everywhere known, was well timed and full of interest and instruction. I agree with Mr. Oubridge that the glass structures might be made more attractive during the winter season than is now usually the case were the plants available turned to proper account; and to aid in making the best of the winter-flowering plants more generally known and their peculiarities better understood, I propose to contribute a few notes on the most valuable of those which may be had in perfection during the Christmas and New Year's festivities.

To avoid going over the same ground as Mr. Oubridge, I shall confine my remarks exclusively to those things requiring the temperature of a stove during the autumn and winter, if not throughout the whole year. And before proceeding further, I would say that in all medium-sized gardens, as well as in those of larger size, provided no serious objection exists to the expense of maintaining the needful temperature, there should be a plant-stove of moderate dimensions. It will be found of great use not only for the accommodation of the things proper to it, but also for accelerating the flowering season of azaleas, rhododendrons, hyacinths, and a host of other things, and in the spring the work of propagating bedding and other plants can be carried on with a degree of comfort unknown to those who have nothing but an ordinary greenhouse and a frame placed upon a heap of fermenting materials, to aid them in their work. In addition, a few good dishes of seakale may be obtained with no more trouble than is involved in lifting the roots, packing them, crown upwards, rather close together in deep boxes, and placing them under the stages of the house. Of course the boxes will require a covering to effectually exclude the light from the seakale, but it is not desirable that I should descend to details.

A very large house will not be required in gardens of limited size, but it must not be too small, or it will not afford space for a stock sufficient to pay for the trouble and expense incidental to the maintenance of the proper temperature. A most useful house for the small garden is one with a span roof, and about thirty feet in length, by fifteen feet in width. The internal arrangements to consist of a central stage, four feet six inches in width, a stage all round, two feet six inches, and a pathway all round, two feet nine inches



wide. It will be a great convenience if a tank, about twenty inches in depth, is formed along one side of the house, instead of the stage. A single pipe carried along the bottom of this, with a platform of slates, and six inches of cocoanut-fibre refuse over it, will form a hotbed which will be found of immense value for propagating purposes, and for starting such things as require the assistance of bottom-heat at any stage of their growth.

When the stove is built the amateur must steadily set his face against stocking it with coleus and other weedy plants, which so frequently usurp the place of really good things. As it is most important the house should present as attractive an appearance as possible during the winter, such things as flower in that season should be selected in comparatively large numbers; and in addition there should be a fair proportion of the most elegant palms, not necessarily expensive kinds: a few marantas, and alocasias, and a goodly number of dracenas, and crotons. The two last-mentioned classes retain their rich variegation throughout the year, and are of themselves well able to produce a most beautiful effect. But to return to the plants for flowering at midwinter, we have, first, the

APHELANDRAS, of which *A. aurantiaca*, *A. nitens*, and *A. Roezli* are the best. These have dark glossy green foliage, and brilliant scarlet flowers, and are remarkably attractive. To produce a stock of neat plants for flowering in winter, take cuttings of moderately firm shoots early in the summer, insert them three together in three-inch pots, and when nicely rooted shift, without separating them, into six-inch pots. A brisk bottom-heat will be of considerable assistance during the rooting process, and after they are struck a rather light position is the most suitable for them. They do not require stopping, and seldom any training, as they are of stiff, erect habit. After they go out of bloom keep rather dry until the early part of March, then prune them back, water moderately, and when they commence to grow freely turn them out of the pots, reduce the ball of soil considerably, and return to pots one size larger. They will require pruning annually, to keep them dwarf and well furnished with foliage to the rim of the pot, but in a general way it is not desirable to keep them after the second year. A mixture of equal parts peat, loam, and leaf-mould, with a dash of sand, suits them admirably.

BEGONIAS of the type represented by *B. saundersiana* and *B. fuchsioides*, are most valuable for winter flowering, they are all of very free growth, have drooping flowers, waxy in texture, and ranging from rose to deep red. Those of the first mentioned are deep rose, and those of the other bright coral red. Other good kinds are *B. Digswelliana*, bright reddish pink, *B. nitida*, and *B. prestoniensis*, orange red. By striking the cuttings in spring in small pots, four or five in each, and then shifting them into five-inch and from these into seven-inch pots, good specimens may be had by the autumn. It is not necessary to stop the shoots, but they must have the support of neat stakes. A compost prepared as advised for the apelandras will suit them admirably. By pruning and repotting annually they may be kept until they become large,

but young plants full of vigour are preferable, and, as a rule, they should be destroyed after flowering the second time.

**EPIPHYLLUM.**—The varieties of *E. truncatum* are very effective when grown in the form of standards with a stem of twelve or eighteen inches above the pot, or as neat bushes. Standards are for general decorations the most preferable, for the growth is somewhat pendant, and as the flowers are produced at the terminal point they appear to better advantage when from eighteen to twenty-four inches above the pot than when hanging over its sides. After the plants go out of bloom they should be repotted if more root space is considered desirable, and be encouraged to grow vigorously by being placed in a warm corner of the stove and receiving liberal supplies of water. By the end of June the new growth will be completed and the stock should then be removed to a sunny position in the greenhouse, where they can remain until the end of October. During their stay in this structure they must be kept rather dry at the roots, in fact from the end of August until their removal back to the stove they must be kept perfectly dry. The most effective varieties of *E. truncatum* are known respectively as *aurantiacum*, *coccineum*, *purpureum*, and *roseum*.

**ERANTHEMUMS.**—Several of these are most effective during the winter. The best are *E. asperum*, white and purple, and *E. pulchellum*, bright blue. They require precisely the same culture as the *Aphelandras*.

**EUCARIS.**—The snow-white *E. amazonica* is of great beauty, and its value for winter flowering cannot well be over-estimated. To have examples in bloom at mid-winter, start them into a vigorous growth towards the end of June or the beginning of July, previously repotting them if required, by placing them in the warmest position in the stove and supplying them liberally with water, and shade them in precisely the same manner as the other soft-wooded plants. Early in September remove to a cooler position and keep rather dry until the second week in November; and then start them into growth again, and in a short time flower-scapes will make their appearance. A compost consisting of equal parts turfy loam, peat, and well-decayed manure is the most suitable.

**EUPHORBIAS.**—The best of these for winter flowering is the elegant-growing and brilliantly-coloured *E. jacquiniflora*. To produce a stock of neat examples with as little trouble as possible, strike cuttings as soon as they can be obtained in the spring. Young shoots about three inches in length, and taken off with a slice of the old wood, make the best cuttings; and if these are inserted in small pots, four or five in each, and shifted on without being separated, they will make most excellent examples by the winter. Peat, loam, and leaf-mould in equal proportions, with a liberal addition of sand, forms a most excellent compost. The pruning of old specimens should be deferred until they have commenced to grow freely, and each branch should be cut back to within half an inch or so of a young shoot.

**POINSETTIAS** are perhaps the most showy of all the high-coloured flowers for mid-winter. Cuttings of young shoots about four inches in length, taken off with a small portion of young wood,

strike freely with the assistance of a genial bottom-heat. April is a good time for commencing the work of propagating, and any old plants that are to be grown on should in the course of that month be pruned, to insure their being sufficiently advanced to be repotted in May or June. A position in a cool house or pit, where they can enjoy a free circulation of air, will be the best for them until the early part of September, when they must be returned to the stove. A mixture of peat or loam and leaf-mould in equal parts, with a moderate quantity of silver sand, will form a compost in every way suited to their requirements. The growth should not be stopped, and if bushy specimens are required, put the cuttings three or four together and shift on without dividing them, otherwise pot them off separately, and as a rule examples in eight-inch pots will be the most useful.

## THE CULTIVATION OF STOCKS FOR ROSES.

BY JOHN HARRISON,

North of England Rose Nurseries, Darlington.



IN my time a very large number of articles have been written on the best kinds of stocks upon which to graft and bud roses intended for garden decoration and for the production of blooms for exhibition purposes. Some writers have extolled the manetti, others have condemned it, and the wild and the cultivated brier have also come in for their share of praise and condemnation. Some of the writers on roses do not appear to think that all that can be said in reference to the stocks has been said, without descending to the details bearing on their cultivation, and about which the majority know but little, for they continue at intervals to direct the attention of the readers of the horticultural journals to the subject without giving directions for the cultivation of the stocks.

Much has of late been done in the way of writing up the seedling brier, and by many writers the raising of this stock is regarded as a new "discovery" in the art of propagation. That there is nothing "new" about seedling briers, whether wild or cultivated, I shall be able to show in a very few words. It is a fact well known to the older rosarians that up to the year 1844 or 1845 no stock other than the common brier was used, either for standard or dwarf roses. A few dwarfs were occasionally worked upon Celine Noisette, but they were so few that it is hardly necessary to mention them. It was sixty-four years last July since I first budded roses on the seedling brier in the young plantations adjoining the Yarm Nurseries, and since that time I have annually worked roses on seedling briers, and continue to do so. Every year I have large quantities of brier "hips" collected, and these are sown in my nurseries and in permanent plantations. The stocks raised in the latter are much superior to those produced by the seed sown in the nursery, especially for standards. I know from long experience that a period of not less than eight years is required for the production of stocks for

standards, but for dwarfs they can be budded when two years old. Those raised from seed sown in the nursery do not become strong enough and straight enough for standards. New shoots are constantly springing up from the crown, and every year they increase in strength, but never become straight enough to make good stocks for first-class standards. I have found that the very best stocks for budding several feet above the ground-level are obtained by cutting the young briars back. When they are four years old every brier in the plantation is cut back close to the surface of the soil. In the spring they break freely, and produce stout shoots as straight as a gun-rod. In the July following the severe pruning here recommended, the plants are examined and every shoot removed, except the strongest, which is also invariably the straightest. This is necessary to throw the whole vigour of the plant into one shoot, which alone is of any service. They require two seasons' growth after arriving at this stage before they are lifted and planted in the nursery quarters, but they may be budded in the July following their being transplanted. Standard roses on stocks such as are produced by the system described above, are, with ordinary cultivation, very healthy and durable; much more so than those worked on the hedge brier. Indeed, the latter are, comparatively speaking, worthless, for not more than one in ten ever makes a thoroughly healthy standard.

Mr. Rivers conferred a great boon upon English nurserymen by introducing the manetti. I well remember Mr. Rivers mentioning to me at York, when he first introduced the stock, that he had a rose-stock which had been sent to him from the Continent by a gentleman who had stated that it was the best stock for dwarf roses. The gentleman referred to was Signor Manetti. Mr. Rivers sent a supply to Mr. T. Appleby, of York, who divided the stock with me. These stocks were planted about the year 1842, and in due course were worked, and when, two years afterwards, Mr. Rivers saw them he was quite astonished at the progress we had made with them. It was many years after this time before the stock became popular amongst the nurserymen. Many persons tried long and perseveringly to write it down, but after seeing the magnificent growth and blooms produced by plants on the manetti, and the facility with which it could be multiplied, and the rapidity with which the Continental and other new roses could with its aid be distributed, they were at last compelled to come "into the ring." Certain it is that unless they had done so they could not successfully compete with others in the trade.

The manetti stock must still be used for spring and autumn grafting, as it is far superior to the seedling brier for that purpose. But as soon as sufficient to send out to the trade in large quantities can be propagated, I shall send out a stock which is as superior to the manetti as that stock is to the seedling brier for the early propagation of new roses. I say this without any desire to push trade. This stock suits all kinds of roses, hybrid perpetuals, teas, and noisettes taking to it freely, whether budded or grafted. This I call the Napoleon stock. It is earlier and freer than the manetti, and continues to grow until the sharp frosts come on. The manetti

is at least weeks earlier than the brier, and roses on it are from twenty to thirty days earlier in coming into bloom.

The undermentioned varieties of roses do not take freely to the manetti, nor to the cultivated brier, namely:—*Madame Furtado*, H.P.; *Devienne-Lamy*, H.P.; *Henri Ledechaux*, H.P.; *Clémence Raoux*, H.P.; *Hippolyte Flandrin*, H.P.; *Jean Touvais*, H.P.; *Josephine Beauharnais*, H.P.; *Lælia*, H.P.; *Souvenir de la Malmaison*, B.; *Louis Magnan*, H.P.; and *Queen Victoria*, H.P.

### HEBECLINIUM ATRORUBENS.



THIS handsome asteraceous plant is rarely seen in good condition, though it is abundantly worthy of the care required to insure a full development of its beauties. It is a native of the tropical parts of Mexico, and consequently should have stove treatment, and, as it flowers in January and February, it must be wintered in the lightest,



HEBECLINIUM ATRORUBENS.

as well as driest, part of the stove, for the flower-buds fall without expanding if exposed to a damp or low temperature. When well

December.

grown it attains a height of four feet, with leaves ten to twelve inches in length, of a beautiful green colour, the whole crowned with numerous globular capitules of violet or rosy purple-coloured flowers. In its season it is at once unique and valuable, and may be grown to grand dimensions if handsome specimens are required.

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### TEA-SCENTED ROSES.



TO grow Tea roses is, indeed, an object worthy the ambition of the most abandoned horticulturist; and the task recommends itself to the enthusiast, because it is surrounded with difficulties. The mere booby who thinks to accomplish wonders without first going through a patient course of preparative practice, will only proclaim his sorry case to all beholders when he puts forth his clumsy hands among these lovely but coy and capricious flowers. They seem to have been designed by Nature to furnish the highest test of skill and devotion in rose culture, and as a standing proof to all would-be rosarians that the cultivation of roses does not consist in merely buying the plants and sticking them in the ground, and then pruning them with a knife and fork.

The first of the Tea roses known in England was the Blush, introduced in 1810. In 1824, Mr. Parkes introduced the Yellow Tea-scented (which is still entered in the catalogues), a very beautiful semi-double and slightly scented rose. These two became the parents of the numerous varieties now in cultivation, and hence the distinctness of character perceptible throughout the whole group, much as they differ in degrees of robustness and other qualities. The characteristics of the group are an ample, glossy, deep-green foliage, and generally a free, robust growth, though there are many weak growers among them; flower-buds conical; flowers varying in colour from white and yellow to rose and pink, but never crimson or purple, and emitting a delicious odour, which is usually compared to that of tea newly opened in the chest. They are all comparatively tender, and when grown without proper care they are pretty certain to be reduced in number by severe winters, cold springs, and mildew and drought in summer. A certain few of the number seem capable of withstanding any combination of adverse circumstances, but of the rest it must be said they should be well grown or not grown at all. The first requisite to success is a nourishing, well-drained, warm soil, and shelter from east winds. A south wall is a capital place on which to train the most vigorous growers of the family, but these should never be expected to go higher than ten feet, though a growth of twenty feet may be obtained where the circumstances are very favourable. If they must be grown in exposed situations, some plan of protection should be adopted, or the trees should be lifted in autumn, and planted in dry earth in a shed or under a south wall till spring, and then be returned to their former position. If this is done with care, standard Teas may be kept for many years, and will be well worth the little trouble occasioned; but when an extra severe winter occurs, all Tea roses not under glass are sure to suffer, and the cultivator must take his risk of losses. All the free-growing varieties do remarkably well on briars, and make charming standards; and all of them—free, shy, and otherwise—do well on their own roots, and make beautiful beds. When so grown, the most delicate are easily protected by covering the beds with moss or litter all winter, for though the frost may kill these tender shoots, the protected roots will escape, and throw up a new growth during the summer, which will bloom abundantly in autumn. But if on Manetti stocks, a severe winter usually kills them outright; for this stock begins to grow very early in the season, and if the shoots are killed back as low as the junction of rose and stock, there is nothing left but Manetti roots, and the roses are lost entirely. Just as there are risks attendant on the culture of Teas in the open ground, there are no risks at all in growing them under glass. The difference in their behaviour is marvellous, and we have but to plant them out in a conservatory border and keep them freely

ventilated and frequently syringed, and they will bloom with such profusion as literally to astonish the novice who has taken the proper means to ensure success. When grown on briers, the soil should be a stiff loam abundantly manured; when on their own roots, a light soil consisting of peat, rotted turf from a loamy pasture, and decayed stable dung equal parts, will suit them to perfection. Tea roses on their own roots should never be planted in the stuff known as "common garden soil."—*Hibberd's Rose Book.*

## NATURAL FRUIT CULTURE.



At a meeting of the Maidstone Farmers' Club, held on October 19th, Mr. Shirley Hibberd delivered a lecture on "Natural Fruit Culture." The chair was occupied by A. Chittenden, Esq., President of the Club, and there was a large attendance of members; and also of gardeners, who were present by invitation from the committee of management.

After remarking that every question connected with the home production of food acquired increased importance every year, Mr. Hibberd proceeded to deal with the subject systematically, saying he would begin with the roots of the trees, and in due time find his way among the branches. The primary conditions of soil and climate in their influence on fruit production, were instructively illustrated in the Agricultural Returns, in which it would be seen that the cultivation of fruit was in some sense a local industry. Certain sheltered spots were noted for profitable orchards, and on the other hand there were vast tracts of country wherein fruit-growing was unknown. A comparison of the fruit-growing districts with the rest of the country would show, first, that a kind climate is a matter of considerable importance, but a deep fertile soil was of still greater importance, for while much can be done to ameliorate the climate, if the soil will not produce a crop of wheat it is in vain to ask it to produce a crop of apples. There cannot be a doubt that land on which heavy crops of beans, wheat, and roots were raised would also produce fruit in plenty; but as every soil will not suit every fruit, so the man who proposes to plant largely would do well to consider first, whether the trees he has in his mind's eye will feel themselves at home when they have stood on the site a few years and are expected to pay their rent and something over. To create a fruit-producing soil is impossible, but it is not impossible to create a fruit-producing climate, and it would be found that where hills and woods softened the climate, a fairly good soil of some depth would produce almost any of our hardy fruits in reasonable abundance. The fruit-producing districts of Hereford, Somerset, Worcester, and the home counties, are all characterized by deep soils and soft climates, and, in a majority of instances, the soils that give the best returns are those that possess a notable proportion of calcareous matter in their composition. While, however, shelter is of the utmost value, and a large plantation usually pays better than a small one, because the trees shelter each other, a certain amount of exposure is desirable, and should be sought for in selecting a site for an orchard. When we have found a good soil and a soft climate, it will, as a rule, be more prudent to plant on a breezy eminence than in a sheltered hollow, and although the trees will grow less fast in the cooler aspect, they will make better returns and last longer. It is in damp, close, low-lying situations that canker, blight, and the occasional death of large limbs of trees mostly occur; and it is in such places, too, that the spring frosts accomplish the most terrible havoc, year after year sweeping away the crop; and when the trees escape injury from this cause, they bear such enormous crops that they lose their best limbs from the weight, and are injured in constitution by the excessive tax on their energies. On the breezy hill-side the trees begin to grow late, and are the safer in consequence. They make less growth every year than they do in the valley, and that growth is harder, and soon matures fruit spurs. Hence, a certain degree of exposure promotes constant and moderate fruitfulness, which is much more to be desired than a glut of fruit in seasons when everybody has plenty, and it scarcely pays to carry it to market. And it will be observed that the orchards that enjoy a breezy position in a good climate are always clean and healthy. Fresh air does no more suit vermin than pure water does, and in a place where the trees grow late, the grubs that come out early are subjected to starvation, and perish away



before the time has arrived for them to do any serious mischief. Another useful agency in promoting favourable conditions is grass turf. Whenever the circumstances of the cultivator permit the growth of grass turf, it should be encouraged, for it is not natural fruit culture to dig amongst fruit trees; we shall never see handsome old trees constantly and sufficiently productive on land that is systematically occupied with other crops. Grass is not only a protection against the injurious operation of the plough and the spade; but ground covered with grass turf absorbs sun heat more slowly than cultivated ground, and consequently is comparatively colder in the spring, and hence does not favour early growth. A breeze above and turf below favour late growth of the trees, and that enlarges their chance of escape from spring frosts.

Trees help each other, and as the best sticks of timber come from land that is clothed with trees, so the biggest haul of fruit may be looked for where the fruit-trees are all in a lump, sheltering each other, not only as to their branches, but as to their roots also. I am thoroughly satisfied and prepared to maintain that every tree needs the shelter of its own branches for its own stem and roots, and that consequently to remove the lower branches, and so expose the stem and the roots to the full power of the sunshine, is an injury that must be paid for in diminished vigour and fruitfulness. Trees of all kinds thrive better in companies than as isolated specimens, more especially in the early stages of their growth. It is not because they shelter one another above ground only, but because also their continuous spread of aerial growth shades the ground and keeps the roots cool and moist, and hence where the trees "lay their dark arms about the field" as isolated specimens that grow at their own sweet will, equally with the place where many trees produce "a boundless contiguity of shade," we see vegetable life manifested in its proper glory, and must confess that between nature and art in this matter there is indeed a great gulf fixed.

I ask you now to take an extreme case the other way. Here is an apple-tree grafted on a starving Paradise-stock, and kept within bounds by pruning and pinching, and occasional hacking of its roots. This poor tree has perhaps in its time produced a dozen apples; it has also produced plenty of American blight; but you see this hapless apple-trees in your mind's eye, and I will not trouble you with a delineation. But it may be proper, however, to look at another apple-tree. It is in the garden of our friend Hodge, and was, once upon a time, a very respectable apple-tree. It is a standard, and has a head. It is confoundedly ugly; there are running sores on the stem, the head is snaggy, with lots of dead wood mixed with live wood and cottony blight, and the tree has produced a couple of dozen nice apples. If you can in imagination clothe that tree from the ground-line upwards—restore the roots that Hodge has chopped away with the spade; restore the boughs he has joyfully sawed off, thinking himself the while a dabster at pruning—you will have no trouble in making a pretty and buxom tree of it, and hanging on its glad branches a few bushels of nice apples.

In addressing the farmers of Kent, I know I must concentrate my language as well as my thoughts, and I shall endeavour now to sum up in a few practical proposals the results of the observations and experiments in fruit culture that have occupied and amused me during the past quarter of a century or so. It may be advantageously observed, then, that the ghost of a tree will not produce marketable fruit. You must have a vigorous, healthy, thriving tree, if you propose to pursue profitable fruit culture. Consequently, to return to the roots, a tree should have roots of its own, or the aid of vigorous roots if it is budded or grafted. There may be room for improvement as to the stocks on which the various kinds of trees are grafted, but generally speaking, those customarily used answer pretty well. If there is a special bone of contention anywhere, it is among apple stocks; for there are in the market several very bad stocks, and they are bad in this way, that the trees grafted on them never grow larger than umbrellas, and never produce more than fourteen fruits. During several years past I have been quite rich in trees of this sort, but I should have been poor indeed had I depended on such trash for a living. Fruit-growing for a fad is very different to fruit-growing for a fortune. I am satisfied that for profitable fruit culture the free stocks are alone worth serious attention, except in special cases. I know growers who make it pay to grow pears on the quince and apples on the Paradise stock, but vigorous seedling natural stocks have more wear and tear in them than any of these dwarfing stocks; and in



# INDEX.

—0—

Achimenes, new way to grow, 54  
 Agaves, 164  
*Alpinia nutans*, 167  
*Amaranthus*, culture of, 33  
 Amateur gardener's friend, 8  
 Anemones for borders, 129  
 Ants in fruit house, 254  
*Aponogeton distachyon*, 127  
 Apples for exhibition, 1  
 April work, 123  
 Aroids, fertilization of, 291  
*Arum muscivorum*, 291  
 Asters for exhibition, 254  
*Astilbe japonica*, 128  
*Aucubas*, 61, 353  
 August work, 249  
 Auriculas, 61  
 Azalea, cultivation of, 76, 159

*Beaucarnea recurvata*, 166  
 Bedders, to prepare for planting, 116  
 Bedding plants for spring flowers, 295  
 Bedding plants, select, 282  
 Bedding plants, to propagate, 276  
 Bee preserver, 155  
 Beetroot, 3  
 Begonias, summer flowering, 149  
 Begonias with ornamental leaves, 289  
 Bell-flower, Robinson Crusoe's, 214  
 Birds in gardens, 269  
*Bossica linophylla*, 248  
 Bouvardias, 340  
 Briers for stocks, 46  
 Broad beans, 3  
 Broccoli, culture of, 3  
 Bulbs for conservatory, 279  
 Bulbs for flower garden, 323  
 Brussel sprouts, 3  
 Brussels Horticultural Exhibition, 188

Cabbage, culture of, 4, 216

*Caladiums*, culture of, 257  
*Calatheas*, 161  
*Calceolaria* cuttings, 254  
 Camellias, 351  
 Campanulas, choice, 105  
 Canterbury bells, 235  
 Carrots, culture of, 4  
 Cauliflower, culture of, 3  
 Celery, culture of, 4  
 Christmas flowers, 366  
*Chrysanthemums*, 30, 65, 92, 342, 346, 377  
 Church-spire juniper, 186  
*Clianthus Dampieri*, 95  
 Conservatory, baskets for, 139  
 Conservatory plants, 163  
 Conservatory flowers, 307  
 Cox's red leaf russet apple, 328  
 Crocuses, 320  
 Cropping kitchen garden, 2  
 Cucumber, culture of, 4  
 Currants fruited at Chiswick, 266  
 Cyclamen, Persian, 342

Dahlias for borders, etc., 74, 92, 133  
 Daisies for the garden, 110  
 Darwin on climbing plants, 29  
 Death's-head moth, 228  
 December work, 377  
 Domestic floriculture, 93  
 Drawing-room ferns, 243  
 Drawing taught in five minutes, 55  
 Dried flowers, to preserve, 31  
 Dwellers in our gardens, 154

Endive, culture of, 5  
 Enemies of the garden, 179  
 Ericas, cultivation of 262

*Ericas*, Rollison's, 225  
*Ericas*, selection of, 250  
*Eucalyptus globulus*, 126  
 Everlastings, to dye for decorations, 294

Fallacies in fruit culture, 86  
 February work, 57  
 Fernery for show, 303  
 Fern paradise, 317  
 Ferns, new, 184  
 Ferns, to re-pot, 53  
*Ficus elastica*, 114  
 Fine flowers from cheap seeds, 82  
 Floral decorations, 29  
 Flower-beds in winter, 358  
 Flower gardens, to plant, 142  
 Forecourts, embellishment of, 334  
 French beans, to force, 63  
 Fruit culture, natural, 373  
 Fruit culture on farms, 313  
 Fruits for new year, 17  
 Fruit, selection of handsome kinds, 1  
 Fruit trees, to protect, 71

Gardens, to lay out, 131  
 Gas-light flowers, 7  
 Gauntlet geranium, 151  
 Geraniums for bedding, 137  
 Geraniums, to winter, 297  
 Gladioli, culture of, 42  
 Gladioli, selections of, 58  
 Gloxinias, new, 97  
 Godetia, Lady Albemarle, 265  
 Gooseberry caterpillar, 224  
 Grapes, late, 273, 356  
 Grapes, to colour, 192  
 Grasses for decorations, 79  
 Grasses to die for decorations, 294, 330  
 Greenhouse winter management, 332  
*Grevillea robusta*, 165

Hanging baskets, 139  
 Hardy flowers for conservatory, 307  
*Hebeclinium atrorubens*, 371  
 Hedges for shelter, 288  
 Hibberd's edging tile, 172  
 Horticultural Society, reconstruction of, 344  
 Hotbeds, management of, 71  
*Hoya carnosa*, 96  
 Hydra, history of, 176  
 Hydrangeas, culture of, 107  
 Hydrangeas, specimen, 230

India-rubber plant, 114  
 Insecticide, new, 30  
 Insects, British, 93  
 Insects in relation to plants, 349  
 Impressions of plants, 190  
 International potato show, 337

January flowers, 14  
 January work, 28  
 Jerusalem artichoke, 153  
 July work, 220  
*Juniperus excelsa stricta*, 186  
 June work, 187

Kale, cottager's, etc., 5  
*Kalosanthes*, cultivation of, 256  
 Kidney beans, culture of, 5  
 King's parrot, 364  
 Kitchen garden, cropping, 2, 146  
*Kolreuteria paniculata*, 11

Labels for plants, 124  
*Lapageria*, to cultivate, 195  
 Lavender crop, 317  
 Leaf ornaments, 62  
 Lettuce, culture of, 5  
 Lifting trees, 311  
 Lilies, notes on, 193  
 Lily of the valley, 346  
*Lobelias* for conservatory, 255  
*Lomaria gibba*, 127  
 London parks, 286

*Macrozamia spiralis*, 31  
 Manetti stock, 207  
 Marantas, 161  
 March work in garden, 90  
 Marvel of Peru, 96  
 May work, 155  
 Melon culture in a nutshell, 112  
 Melons, culture of, 5  
 Mosses, to dye for decorations, 294, 330  
 Mushroom culture, 271  
 Mushroom, reproduction of, 19  
*Myrsiphyllum asparagoides*, 159, 217  
 Myrtles, 128

*Narcissus*, classification of, 345  
 Natural fruit culture, 373  
 Nature printing, 190  
 New year, fruits for, 17  
 Novelties for 1876, 118  
 November flowers, 340  
 November work, 347

October work, 315  
 Onion, culture of, 6, 62  
 Onions grown at Chiswick, 50  
 Oranges, home-grown, 9  
 Orchid house, amateur's, 40  
 Orchids, new, 240  
 Out and about, 94

Pansies for beds, 201  
*Papaver umbrosum*, 248  
 Peach, culture of, 288  
 Pears for exhibition, 2

- Pears for small gardens, 304  
 Peas, culture of, 6  
 Pelargoniums, old, 60  
 Pelargoniums, early flowering, 169  
 Pelargoniums for winter flowers, 173  
 Pelargoniums grown at Chiswick, 329, 362  
 Penn's Maxims, 154  
 Persian love of flowers, 287  
 Petunias, seedling, 44, 191  
 Phalænopsis, 321  
 Phormium tenax, 164  
 Plant stove in winter, 352  
 Potato Show at Alexandra Palace, 337  
 Potatoes for exhibition, 101  
 Potatoes in Victoria, 284  
 Pottery tree, 210  
 Primroses, hardy, 144  
 Primulas, splendid, 96, 343  
 Printing plant forms, 190  
 Propagating case, 95  
 Protection of fruit trees, 69  
 Pruning wall trees, 63  
 Purple-leaved peach, 95  
  
 Radishes, culture of, 6  
 Rambles in search of shells, 29  
 Reineckea carnea, 360  
 Robinson Crusoe's Bell-flower, 214  
 Rollison's Nurseries, 247  
 Rose, cultivation of, in towns, 232  
 Roses in pots, 20  
 Rose-breasted Cockatoo, 239  
 Roses, tea-scented, 223, 372  
 Roses on Manetti stock, 207  
 Roses, selecting and planting, 300  
 Roses from autumn cuttings, 331  
 Royal Aquarium, 56  
  
 Salading, winter, 207  
 Savoy cabbage, 6  
 Seakale, to force, 351  
 Seed saving, 170  
 Selaginellas, 197  
 September work, 285  
  
 Solanums, 343  
 Spring bedders, 295  
 Spring cabbages, 216  
 Sticks and labels, 124  
 Strelitzia regina, 166  
 Stocks for roses, 46, 207, 369  
 Strawberry beds, 199, 255  
 Strawberries for small gardens, 226  
  
 Tacsonias, 351  
 Tabuan parrot, 364  
 Tea-tree, 61  
 Tile culture of potatoes, 125  
 Todea superba, 254  
 Tomato, culture of, 6  
 Tomatoes, notes on, 81  
 Tree lifting, 311  
 Tree memorials of Dr. Watts, 325  
 Turnip, culture of, 6  
 Tulip Show, National, 213  
  
 Vallotas, specimen, 298  
 Vegetables for April and May, 167  
 Vegetable marrow, culture of, 6  
 Verbena, hardy, 47  
 Verbenas in flower garden, 49  
 Victoria Park, 260  
 Villa gardening, 154  
 Vinery, amateur's, 32  
 Vines for forcing, 351  
 Violas for beds, 201  
 Violets for winter flowers, 320  
  
 Walnut culture, 272  
 Watts, memorials of, 325  
 Weeping trees, 35  
 Williams's Nurseries, 121  
 Window flowers, 32  
 Winter flowering plants, 204, 358  
 Winter management of greenhouse, 332  
 Winter salads, 207  
 Woodlice, to trap, 191  
 Worcester Nurseries, 26  
 Worcester pearmain apple, 1  
  
 Yuccas, 163

## WOOD ENGRAVINGS.

- |  |   |
|--|---|
| <p>Cedar-tree in Abney Park Cemetery, 326.</p> <p>Death's-head moth, 229</p> <p>Hebeclinium atrorubens, 371</p> <p>Hydra fusca, 177—8</p> <p>Inflorescence of <i>Kolreuteria paniculata</i>, 13</p> <p><i>Kolreuteria paniculata</i>, 12</p> | <p>Mulberry tree in Stoke Newington, 327</p> <p><i>Populus tremula pendula</i>, 38</p> <p>Pottery tree of Para, 212</p> <p><i>Reineckea carnea</i>, 360</p> <p><i>Spiranthes autumnalis</i>, 237</p> <p><i>Ulmus montana pendula</i>, 38</p> <p><i>Wahlenbergia tuberosa</i>, 215</p> |
|--|---|

## COLOURED PLATES.

- |  |  |
|--|--|
| <p><i>Amaranthus</i> Princess of Wales, 33</p> <p><i>Anemone fulgens</i>, 129</p> <p><i>Aucuba japonica aureo-maculata</i>, 353</p> <p><i>Begonia</i> Rex var. <i>nebulosa</i>, 289</p> <p><i>Calathea crocata</i>, 161</p> <p><i>Chrysanthemums</i> General Slade and Venus, 65</p> | <p><i>Caladium chantini</i>, 257</p> <p><i>Ericas</i>, new varieties of, 225</p> <p><i>Gloxinias</i>, new, 97</p> <p><i>Lilium chalconotum</i>, 193</p> <p><i>Phalænopsis schilleriana</i>, 321</p> <p>Worcester pearmain apple, 1</p> |
|--|--|

growing fruit for market you must begin with vigorous trees, which dwarfing stocks cannot produce. I will suppose some of my farming friends here to become by some delusion enamoured of pinched-in pear-trees on quince stocks, and to resolve on planting orchards with them. Well, they could obtain the trees averaging, perhaps, the size of a man, and, as a persuasive writer on the subject would say, "bristling with fruit buds." These trees would cost a lot of money per acre, and would present a wonderful appearance the first season by their awful prodigality of bloom. In subsequent years the fruit would appear in dots, and by reason of the immense distance between them, would cost a lot to gather; and then the trees would grow vigorously for seven years, and begin to bear again more naturally and in reasonable plenty. You must bear in mind I only supposed you might plant such things; as a matter of fact, you will not do any such thing. But as dwarfing stocks have their uses, and this is an age for small profits and quick returns, I wish to say that dwarfing stocks may in certain cases be used advantageously in fruit farming, provided the soil is good, the climate soft, and the trees are never permitted to see or feel the pruning-knife.

As to the form of trees, you will understand by this time that I believe in the natural form, whatever that may be. If trees are grafted low, and allowed to branch naturally, so as to form free bushes or pyramids, as their habit may be, we shall get a better return from them than by any system of pruning whatever. I am not prepared to lay down a rule that a fruit-tree should never be pruned in any way whatever, but I do say that pruning is a delicate business, and if it cannot be performed by a man who thoroughly understands the habit of the tree, and has a prophetic sympathy with its individuality, it had better not be attempted; and remember Nature is kind, and given a healthy tree, she delights in clothing its unpruned branches with fruits in such a way that, wanting a comparison, we rashly say they look like ropes of onions. When trees have newly obtained possession of a good soil they are apt to produce willow-like shoots, as if, instead of fruits, fishing-rods were required of them; the rule of the pruner is to cut these back, and the rule of nature is to produce another crop of fishing-rods. In such a conflict art can only triumph by adopting a course injurious to the vitality of the tree. Instead of cutting out these fishing-rods, we have but to attach to them light weights to bring them gently down to a nearly horizontal line, and the check to the rush of the sap upwards will cause them to form fruit spurs from the base to the very tip, and the result will be abundant fruitfulness, instead of a costly and a fruitless conflict. This mode of procedure, which I have called "pulley pruning," is a lesson from nature, and constitutes a proper chapter in this hasty treatise on natural fruit culture.

You have observed that when a tree becomes fruitful it becomes more and more fruitful so long as it continues in health. One reason is that the weight of the fruit pulls the branches down to a horizontal line, and this checks growth and promotes hardening of the wood. Thus fruitfulness begets fruit. The habit of growing is changed into the habit of bearing, but you must have a tree first, and then a gentle way of persuading it to pay its rent is the best way, for violence it will resent by making myriads of useless willow rods instead of fruit. It may occur to you as it has to others to whom I have communicated on this subject, that tying the rods down is better than attaching weights, but that is a mistake. A certain amount of tying and training must be done for convenience sake, but it is good for a tree to be able to sway and rock to the wind, and in staking newly-planted trees they should be treated as live things that enjoy the air they breathe.

As regards the selection of varieties, there is really not much in a general way to be said. It may be proper to remark, however, that there prevails a general belief that varieties necessarily wear out, but there is not a fraction of evidence worthy of attention to favour this prevailing belief. The Golden Pippin is worn out, and of necessity ceased to exist fifty years ago. But I can boast of a tree that is startling in its beauty and almost oppressive in its fruitfulness. Probably many persons are familiar with healthy and fruitful trees of Golden Pippin, and Ribstone Pippin apples, and Jargonelle pear, that ought to have been dead long ago, and that would have been dead and gone and forgotten were it not for a perversity of nature in managing matters her own way, and in some sort of contempt for the fancies of man, and even of his boasted art. The lesson for fruit growers is to ignore this rubbish, and to plant what they think will suit their soil, their climate,

their market, taking care to plant well-made healthy trees; for while we may hold that a race or variety has in it an almost inextinguishable life, we must admit that individual trees do not necessarily partake of it.

It will be expected I should say something of garden trees, although they present a subject somewhat far removed from the one before me. As a matter of course, the same general principles apply equally to trees in gardens and in orchards, although in the one case small supplies of many sorts are required, and in the other large supplies of few sorts. Well, a few unpruned thrifty bushes to supply the house with a sufficiency of apples, pears, and plums may with great advantage be considered necessary features in a garden. When we come to collections and restricted culture, the case assumes another aspect. I am not here to quarrel with any man who seeks amusement in pinching pear-trees, but the truth must be told, that the fruit produced by trees "properly" pinched, rarely pays for the time bestowed in producing it. I have witnessed hundreds of instances of this kind. A gentleman forms a fruit garden, and secures a collection of trees. His gardeners persistently prune and pinch them, and the owner enjoying a cigar, while sauntering about the garden occasionally has a turn at pinching himself. This goes on for years, and a few packs of fruit are secured, but never such a quantity as can be properly called a crop. The supply that was hoped for is always to come next season, and as to-morrow never comes, so the fruitful season never comes—that is to say, it does not come according to the pruning and pinching mode of inviting it. Hope deferred maketh the heart sick, and the owner and his men enter into a conspiracy against the miniature trees, they do not confess it. The result is that the trees are neglected? they no longer enjoy the inestimable advantage of scientific pruning, and as nobody now cares what they do they make a vigorous growth, as if going in for basket work. In about three years from the time the trees began to have their own way, they are found to be loaded with fruit, and some of them break down under their honourable loads, and the problem is solved, how to secure fruit in a garden. Now, as we must provide amusements in the garden, and the planting and pruning of fruit trees is a pastime that many amateurs delight in, I propose that we bring it as closely as possible into conformity with the teachings of nature. It is a maxim of Roman law that the freeholder's rights extend as deep as he can dig, and as high as he can soar—*Usque ad cælum*. I ask you as philosophers to bear in mind that the chief task in every case, for the tiller of the ground, is to convert sunshine into money. It follows that the larger the tree in proportion to the ground it covers, the more profitable it will prove in fruit bearing. Suppose a case. We select a tall Normandy poplar, and hang upon it as many apples and pears as it can carry. We shall require thousands of fruits for the adornment of this tree. We next find a dwarf spreading miniature tree such as horticulture declares the correct thing, and this tree we proceed to adorn in like manner. We do not need thousands of fruits now, hundreds will suffice; indeed, a few dozens will go a long way. And when we measure the space of ground covered by each tree we find it nearly the same, the difference in the dimensions being in the perpendicular. The Lombardy poplar has the best of it as a converter of sunshine into money. Thus we learn that the upright cordon is the best form in which to prune and train trees where it is desired to cover a small space of ground with a considerable collection of varieties of fruits. By allowing the trees to go up, we, in some measure, compensate them for the restriction of their lateral growth; we accomplish the principal object of restriction with less violence to nature, and we secure healthier and more fruitful trees than by any other process of close pruning.

Finally, I have spoken thus far of trees proper, and will conclude by saying that bush-fruits no more need pruning than apple, and pear, and plum trees do. The experience of only one season will settle the matter, and the raspberry may be selected as an extreme case. Plant in deep strong land well prepared, a row of canes of any of the popular red sorts. Put them a yard apart, and allow plenty of room right and left of the row. Having planted them, do nothing more, but take particular care that the ground is not dug amongst their roots. They are not to be supported, or sheltered, or meddled with at all. In the course of the summer they will throw up three or four stout canes that will arch outwards naturally to secure a share of the sunlight, and in due time these canes will produce fruit from top to bottom. The next lot of canes will be stouter than a stout man's thumb; there

will be just enough of them and no more. They will not need to be thinned or shortened, or supported. The only objection to this mode of management is that the production of fruit is apt to take one by surprise, and to cook the produce of a plantation under natural management will necessitate the borrowing of all the preserving pots and pans in the parish. The currant and the gooseberry need no pruning whatever, unless it be for some special purpose; and if you make a note of their behaviour in some neglected garden, you will see that the young wood of the last season, that "ought" to have been pruned away, is as heavily laden with fruit as the old wood, and it is not unusual for trees thus left to nature to be so bent down every year with the weight of the fruit as to acquire a pendulous habit—this, indeed, is nature's way of pulley pruning.

## CHRYSANTHEMUM SHOWS.

THE exhibitions of chrysanthemums in the metropolis and the provinces have, generally speaking, been very satisfactory, although the average quality of the flowers has not been so high as during the last two or three years. To present detailed reports is out of the question; but for the information of our readers we give the names of the finest varieties staged at the several exhibitions. *Incurved Flowers*.—Beverley, Bronze Jardin des Plantes, Dr. Brock, Empress of India, Fingal, Florence Nightingale, General Bainbrigge, General Hardinge, George Glenny, Gloria Mundi, Golden Beverley, Golden Dr. Brock, Golden John Salter, Guernsey Nugget, Isabella Bott, Jardin des Plantes, John Salter, Lady Hardinge, Lady Carey, Lord Derby, Miss Mary Morgan, Mrs. G. Rundle, Mr. Brunlees, Mr. Gladstone, Pink Pearl, Prince Alfred, Prince of Wales, Princess of Wales, Princess Teck, Rev. J. Dix, Queen of England, White Venus. *Pompones*.—Andromeda, Aurore Boréale, Bob, Cedo Nulli, Fanny, Golden Aurore, Hélène, Little Beauty, Madame Eugene Domage, Madlle. Marthe, Mrs. Turner, President Decaisne, Rose Trevenna, St. Michael, Salamon, White Trevenna.

## THE GARDEN GUIDE FOR DECEMBER.

O NATURE! all thy seasons please the eye  
Of him who sees a Deity in all.  
It is his presence that diffuses charms  
Unspeakable, o'er mountain, wood, and stream.  
To think that He, who rolls yon solar sphere,  
Uplifts the warbling songster to the sky;  
To mark his presence in the mighty bow  
That spans the clouds as in the taints minute  
Of tiniest flower; to hear his awful voice  
In thunder speak, and whisper in the gale:  
To know and feel his care for all that lives;—  
'Tis this that makes the barren waste appear  
A fruitful field, each grove a paradise.  
Yes! place me 'mid far-stretching woodless wilds,  
Where no sweet song is heard; the heath-bell there  
Would soothe my weary sight and tell of Thee!  
There would my gratefully uplifted eye  
Survey the heavenly vault by day,—by night,  
When glows the firmament from pole to pole;  
There would my overflowing heart exclaim,  
"The heavens declare the glory of the Lord,  
The firmament shows forth his handiwork!"

JAMES GRAHAM.

### FLOWER GARDEN.

In warm sheltered places the Christmas Rose, *Helleborus niger*, will produce its large salver-shaped white flowers; and in more exposed situations this useful old plant may be had in bloom by placing hand-glasses over well-established clumps, or

December.

by lifting them and planting in a cold frame. Deciduous trees and shrubs may be planted during the early part of the month with every chance of success, but unless the planting can be finished quickly, it will be well to leave it until the spring. All unoccupied beds and borders should be dug up, and the surface left rough, to enable the weather to act upon it. Now that the trees have all shed their leaves, clear the shrubbery borders, to prevent their being blown about with every gust of wind, and littering the walks and grass-plots. Protect tea and other tender roees with dry litter or fern; but where they are growing in a prominent position, this system of protection will be objectionable, and, instead of adopting it, take the plants up carefully, and lay them in by their heels in a sheltered corner, and cover with litter or fern. These can be planted again early in March, and will, if handled carefully, scarcely feel the shift.

#### KITCHEN GARDEN.

It is an excellent plan to draw a little earth to the beans and peas now peeping through the ground. In very sharp weather, cover celery with long litter, for it soon rots in the centre after it has been frozen. Take up a supply of Jerusalem artichokes and parsnips for immediate use, and place in the root-house, and cover with dry sand or soil; but the principal bulk should remain in the ground for the present, as they are firmer, and eat more mellow than when taken up at the beginning of the wintee, and stored with other things. Frosty mornings must be taken advantage of for wheeling manure on vacant quarters; and when the weather is unfavourable for out-door work, overhaul the root-stores.

#### FRUIT GARDEN.

Pruning of all fruit-trees, excepting the peach and nectarine, must be commenced in earnest. Lay in no more wood than is really required, for nothing is gained by over-crowding, but much lost. Give apple-trees infested with American blight a thorough washing with strong brine, or the aphis wash, but avoid damaging either fruit-buds or wood-buds. See that trees planted last month are properly staked, and cover the soil immediately over the roots with six inches of half-rotten stable manure, to prevent the frost loosening it.

#### GREENHOUSE AND CONSERVATORY.

To keep the usual stock of greenhouse plants in health during the winter, maintain a comparatively dry atmosphere, which must be regularly changed by opening the ventilators on all favourable opportunities; and if there is any danger of the temperature falling too low, apply a little fire-heat during the time the ventilators are open. To economize fuel, as well as for the sake of the health of the plants cover the glass with thick canvas, mats, or frigidomo, during very sharp frosts, to prevent the escape of the heat. Water early, and choose a clear, bright day for that purpose. It will be better to let the plants be dry for a day or two than water them in damp weather. At the same time, the soil in which heaths and other plants of like character are potted must not be allowed to get dust dry. Cyclamens, and single and double primulas, now coming into flower, must have the warmest corner the house affords. Look sharp after green-fly, and fumigate immediately it makes its appearance. Remove every decayed leaf, and keep everything as clean and sweet as circumstances will permit.

#### STOVE.

Attend carefully to ferns, espically the delicate kinds, like the *Gymnogrammas*, *Nothochlœnas*, and *Cheilanthes*, the fronds of which soon decay, if wetted frequently, or exposed to a damp atmosphere. All kinds should be kept as quiet as possible. Sometimes the close-growing *Selaginellas* will rot at this season, and the best way to stop its progress is to clear away the decayed portion, and then sprinkle the plants with dry sand, and place them in a dry position near the glass for a short time. The necessary precautions must, however, be taken to prevent the tender growth flagging.

10 MAR 1972



